INTERIOR DEPARTMENT APPROPRIATIONS FOR 1953

THURSDAY, MAY 1, 1952

UNITED STATES SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D. C.

The subcommittee met at 10 a. m., pursuant to recess, in room F–82, the Capitol, Hon. Carl Hayden (chairman of the subcommittee) presiding.

Present: Senators Hayden, Cordon, and Knowland.

Also present: Senator Carlson.

BUREAU OF RECLAMATION

MISSOURI RIVER BASIN PROJECT

STATEMENTS OF GOODRICH W. LINEWEAVER, ACTING COMMISSIONER; KENNETH W. MARKWELL, ASSISTANT COMMISSIONER; HARVEY F. McPHAIL, ASSISTANT COMMISSIONER; ALFRED R. GOLZÉ, DIRECTOR OF PROGRAMS AND FINANCE; HENRY B. TALIAFERRO, DIRECTOR OF POWER UTILIZATION; JOHN W. DIXON, DIRECTOR OF PROJECT PLANNING; HOLLIS SANFORD, ASSISTANT DIRECTOR OF OPERATION AND MAINTENANCE; AND T. W. MERMEL, ASSISTANT TO COMMISSIONER, ENGINEERING

WEBSTER AND GLEN ELDER DAMS, KANS.

Senator HAYDEN. The committee will come to order.

Senator Carlson is here. I think it might be appropriate to talk about the Missouri Basin situation particularly with respect to the Glen Elder Dam that the House disallowed. What about that Glen Elder Dam?

Mr. LINEWEAVER. I have a statement which I will summarize briefly, Mr. Chairman, on the Glen Elder dam.

Glen Elder was included in the budget estimates to begin construction of this multiple-purpose dam at the confluence of the north and south forks of the Solomon River in the vicinity of the town of Solomon Rapids, Kans.

The budget request was for $3,620,000.

The House omitted it with this comment in the committee report (reading):

> One new start was proposed in the budget estimates of the Bureau of Reclamation for 1953. This was Glen Elder Dam in Kansas, for which an appropriation of $3,620,000 was requested. The committee has not allowed the project. In the first place, no information was presented to indicate why this particular project

was singled out by the Bureau of the Budget when it disallowed other new starts which have been requested by the Bureau. Without probing into the relative merits of all of the new projects which have been under consideration during the past several years, the committee finds itself in no position to approve this particular new start on the basis that it is now more necessary than some others might be.

Then there is reference to the appointment of a commission by the President to study the Missouri Basin situation.

Senator HAYDEN. Was this project among a list of new starts, and do you know why the Budget picked it out?

Mr. LINEWEAVER. I do not. Glen Elder was in the list along with the Webster Dam farther up on one of the branches of the Solomon, and Webster Dam was recommended by the Secretary ahead of Glen Elder.

I will place a statement in the record with respect to the relative merits of Glen Elder and Webster. The Bureau is appealing the elimination of Glen Elder by the House.

(The statement referred to is as follows:)

WEBSTER UNIT

NEED FOR CONSTRUCTION

The magnitude of the unprecedented flood of July 1951 demonstrated fully the necessity for further regulation, control, and utilization of the water resources in the Kansas River Basin. Webster Dam and Reservoir would provide immediate flood protection for the valley reach just downstream from the dam which contains fertile farm land and the towns of Stockton, Woodston, and Osborne. As an integral part of a basin-wide reservoir system, it will also provide protection to areas of greater population density and economic development farther downstream. The Corps of Engineers has determined that 200,000 acre-feet is required for effective flood control and has evaluated benefits from this protection to be in excess of $400,000 annually at current prices.

The instability of farm incomes due to the drought conditions imposed by the vagaries of climate will be alleviated through the provision of irrigation storage in Webster Reservoir for 9,000 acres of rich valley lands. The introduction of irrigation will result in greater crop yields, improved soil practices, and a better balanced livestock program. Benefits will also accrue in the form of increased recreational opportunities and enhancement of fish and wildlife habitat.

HISTORY OF EARLY INVESTIGATIONS

Investigations were first made in the form of a reconnaissance of the Smoky Hill River Subbasin in September 1939. Field investigation surveys were made in December 1940 as a part of the field reconnaissance survey of the Solomon River Basin and subsequently included in an unpublished reconnaissance report on the entire Smoky Hill River Basin. Reconnaissance-type land classification was made in the project area and geophysical surveys of the dam site were made in October 1941. The conclusions drawn from the surveys and the preliminary water supply study of the Smoky Hill River Basin were covered in an unpublished report entitled "Reconnaissance Report on Smoky Hill River Basin," dated April 1942.

The Webster unit was approved by the Flood Control Act of 1944 as a part of the general plan of development for the Missouri River Basin presented by the Bureau of Reclamation in Senate Document 191, Seventy-eighth Congress, second session (the Sloan plan), and authorized by the Flood Control Act of 1946. This development was not included in the plans of the Corps of Engineers as presented in House Document 475, Seventy-eighth Congress, second session (the Pick plan). It is an integral part of the original Pick-Sloan plan under the Bureau of Reclamation-Corps of Engineers agreement in Senate Document 247, Seventy-eighth Congress, second session, in which the differences between the engineering plans for the two agencies were resolved and upon which the authorization of the Missouri River Basin project is based.

STATUS OF INVESTIGATIONS

Detailed dam-site and reservoir topography will be completed in May 1952. Additional foundation explorations are necessary to provide sufficient data for design purposes. Detailed land-classification studies are continuing and should be concluded within the next year. The flood-control capacity and benefits were determined at a meeting in Denver early in March 1952, subject to confirmation at the Washington level.

A modified definite plan report will be submitted before construction is initiated. The Webster unit report is scheduled for submission to the Commissioner in June 1952. The report will primarily present data on the dam and reservoir and set forth irrigation potentials and other multiple-purpose uses.

PHYSICAL PLAN

Webster unit consists of a multiple-purpose dam and reservoir of 330,000 acre-feet capacity, a diversion dam, and the canal, lateral, and drainage systems required to serve 9,000 irrigable acres. The proposed multiple-purpose Webster Dam will be an earth-fill structure located 1 mile east of Webster. The unit lands extend from the diversion dam near Alton to a point 3 miles east of Osborne. The two main canals, originating at Alton diversion dam, which is 40 river miles below Webster Dam, have a combined length of 38 miles, and will serve lands on both sides of the river.

Physical data for Webster Reservoir is shown in the following tabulation:

	Elevation	Accumulative capacity	Area inundated	Length of reservoir	Average width of reservoir
Top of—		*Acre-feet*	*Acres*	*Miles*	*Miles*
Irrigation pool	1904	130,000	5,000	6	1
Flood-control pool	1932	330,000	9,500	8	2
Surcharge pool	1949	520,000	13,200	10	3

Relocation problems will involve the moving of the town of Webster (population 100), a cemetery of 238 graves, and a few miles of power and telephone lines. No relocation of highway, county roads, or railroads will be required. The average value of the land in the reservoir area is $125 per acre. The easement value for lands above the irrigation level is estimated at $50 per acre.

PRIORITIES OF WEBSTER AND GLEN ELDER

Webster Reservoir

Webster Reservoir (with a flood-control capacity of 200,000 acre-feet) will be filled to the top of the flood-control pool very infrequently. From available frequency data it appears as if the 200,000 acre-feet of flood-control space would fill once in about 400 years provided the following assumptions are made:

1. Flood-control pool empty when flood starts.
2. Discharge held to 0 until flood-control pool is full.

It should be pointed out that this frequency figure is based upon a short record and cannot be considered reliable for a frequency greater than once in 100 years.

The 100-year flood has a volume of about 120,000 acre-feet. This flood would fill the flood-control pool approximately one-half full.

Glen Elder Reservoir

At the present time no reliable frequency curves are available for the Glen Elder Dam site. However, with the greater flood-control capacity at Glen Elder it would probably fill less often than Webster Reservoir.

With respect to the value of frequency flood rates the following comments should be made. The frequency curves are of doubtful value when used to answer the question of what elevation will be reached by a reservoir within a given number of years. The frequency curve is developed to tell the approximate rate of occurrence of floods of different magnitude, regardless of the order of occurrence. (A 100-year flood may occur a few days before or after a 50-year flood.)

The type of flood that will fill the flood-control pool of Webster or Glen Elder Reservoirs will be a series of small floods followed by a large flood as in the case of the July 1951 floods in the Kansas River Basin. For example: Several 5-, 10-, and 25-year floods followed in a few days by a 100-year or greater flood. This type of flood cannot be predicted by frequency curves.

From the standpoint of design the natural priority of reservoirs should be from the upstream to downstream sites. This gives the downstream reservoir the advantage of any control offered by the upstream reservoir.

In the case of Webster (upstream) and Glen Elder (downstream) the following comparison can be made:

If Glen Elder is constructed first the spillway design flood must be derived with no consideration of Webster. This means that the spillway design flood (and the corresponding spillway and surcharge pool) will be derived for a net contributing drainage area of 3,975 square miles. This means that at such time as Webster is constructed to control 1,125 square miles of the drainage area, Glen Elder will then control only 2,850 square miles. For this lower figure a possibility arises that the Glen Elder spillway and surcharge pool may be over designed.

If Webster is designed and constructed first to control 1,125 square miles Glen Elder may then be designed to control floods generated by 2,850 square miles of drainage area that lie below Webster and Kirwin Reservoirs.

This would lead to the assumption that an upstream to downstream priority would give a better design and more control for the same expenditure of funds.

The priority of storage rights, which may be determined by dates of construction of the two reservoirs, should be so that the rights of Webster Reservoir are senior to Glen Elder Reservoir. This is necessary in order to protect the Webster project area from suffering water shortages which could be caused by a Glen Elder project, with senior storage rights, forcing the release of water needed by the upstream Webster project, which has a more arid climate.

ALTERNATE DAM SITE

Since approximately 70 families will have to be moved, including about 25 residing in or near the town of Webster, and some 75 on farms, it would be desirable, if practicable, to relocate the Webster Dam to eliminate removal of the town of Webster and the resettlement of farm families. Consequently detailed analyses were made of three alternate dam sites before final decision was reached. The scarcity of good dam sites is such that relocation of the site would require about $2 million of additional Federal investment. It was found that building a dam on the river at any location would inundate segments of the fertile valley and thus necessitate some displacement of farm families. The problems of relocation were given serious consideration before a final selection of the dam site was made. As a result of these studies, the original dam site near Webster was retained because it is the most economical and engineeringly feasible site. This site is the one included in the original plan presented in Senate Documents 191 and 247, the authorizing documents for the project.

AREA INUNDATED AND AREA PROTECTED

The reservoir area includes 9,500 acres of land to the top of the flood-control pool. Of this sum, 5,100 acres are associated with sedimentation and irrigation storage and 4,400 acres with flood storage. Lands to be benefited are not limited to the irrigable area of 9,000 acres. A total of about 50,000 acres in the flood plain along the South Fork of the Solomon River below Webster Dam will be afforded flood protection. In addition, Webster Dam, together with Kirwin and Glen Elder Dams, would provide flood protection to about 140,000 acres lying between the junction of the North and South Forks of the Solomon to its confluence with the Smoky Hill River. Also, lands in these flood plains are of better typography and fertility than the lands in the reservoir area.

INCREASE IN TOTAL ESTIMATED COST

The total estimated costs of Webster Dam for the authorized plan, based on 1940 prices, was $7,800,000 for a reservoir of 165,000 acre-feet capacity and irrigation facilities to serve 10,000 irrigable acres. As a consequence of the July 1951 Kansas River flood and more detailed studies, it is now proposed to construct a reservoir of 330,000 acre-feet and to irrigate 9,000 acres, at a total esti-

mated current cost of $21,167,000. Although the size of the reservoir has been more than doubled, the increase in cost, after an adjustment for increase in price indexes, is only $3,227,000.

Bureau of Reclamation, Construction and Rehabilitation

Statement on comparative costs, storage capacities, benefits, etc., for the Glen Elder and Webster units

The following is a comparison of the costs, storage capacities, benefits, and so forth, for the Glen Elder and Webster units:

	Glen Elder	Webster
Total estimated cost, dam and reservoir	$36,745,000	$18,167,000
Total estimated cost, irrigation facilities	8,000,000	3,000,000
Total	44,745,000	21,167,000
Reservoir capacity maximum water surface, acre-feet	1,280,000	520,000
Irrigation	192,000	115,000
Flood control	720,000	200,000
Sediment	51,000	15,000
Other (surcharge)	317,000	190,900
Acres inundated:		
Top of irrigation pool	12,000	5,000
Top of control pool	32,000	9,500
Maximum water surface	40,000	13,200
Reservoir rights-of-way:		
Average value of land per acre reservoir area	$200	$125
Estimated easement value per acre for lands above irrigation level	$50	$50
Costs:		
Facilities requiring relocation:		
Glen Elder:		
United States highway, 17.6 miles	$2,300,000	
Missouri Pacific R. R., 20 miles	3,600,000	
Power and telephone lines	82,000	
Gas line	552,000	
Graves	242,000	
Waconda Springs	145,000	
Cawker City well	44,000	
Cawker City dike	131,000	
Town of Glen Elder	3,920,000	
Total cost	11,016,000	
Webster:		
Power and telephone lines		$29,000
Graves		105,000
Town of Webster		664,000
Total cost	11,016,000	798,000
Benefits and costs:		
Public investment:		
Total construction costs	[1] 44,745,000	[1] 21,167,000
Interest during construction	1,838,000	680,000
Less salvage value	1,035,000	512,000
Net public investment	45,548,000	21,335,000
Anaual costs:		
Equivalent of net public investment	1,244,000	582,700
Operation and maintenance, flood control	15,000	10,000
Operation and maintenance, irrigation	63,000	22,000
Total annual costs	1,322,000	614,700
Annual benefits:		
Flood control [2]	1,056,000	370,000
Irrigation	391,000	158,000
Total annual benefits	1,447,000	528,000
Benefit-cost ratio	1.09–1.0	0.86–1.0
Funds required to initiate construction	$3,620,000	$1,500,000

[1] Preliminary field estimates based on current prices.

[2] Benefits as reported by Corps of Engineers based upon prospective future prices (ENR index of 180 when 1939 equals 100). Benefits on 1952 prices are: Webster, $402,500; Glen Elder, $1,148,500. Downstream benefits have been distributed to system reservoirs empirically.

FLOOD-CONTROL PROJECTS

Senator HAYDEN. Is the Webster Dam the dam we appropriated money for last year?

Mr. LINEWEAVER. No, sir. That was Kirwin.

Senator HAYDEN. Was Kirwin in the list submitted?

Mr. LINEWEAVER. Webster was in the list that was submitted last year for expedited investigation.

Senator CARLSON. Funds were appropriated for the Kirwin Dam last year in the last session. The work is already in progress in this project at the present time. There is a budget recommendation for additional funds for 1953 for the Kirwin Reservoir.

As Mr. Lineweaver has mentioned, the Glen Elder Reservoir was in the budget recommendations this year. The Webster project that Mr. Lineweaver has mentioned was not in the budget recommendation.

We do have a number of proposed reservoirs in that area.

Checking the map here I notice there is the Webster, the Wilson, the Ellis damsite on the tributaries of the Kansas River, and the Glen Elder.

I have no doubt one of the reasons for the budget recommendation in the Glen Elder Reservoir was because of the disastrous floods we had last year.

They had been rather consistent on that stream.

On the Solomon River the floods have been very devastating. This project is a Bureau of Reclamation project with some flood control.

I want to say very frankly there is considerable opposition to the construction of the Glen Elder Reservoir at this time. It may be that the Bureau and the engineers have agreed on a definite location for the damsite at the present time.

Some weeks ago I know they had not. That was one of the contentions.

Mr. LINEWEAVER. They have agreed on a site for Glen Elder now.

Senator CARLSON. That was one of the complaints I had received, that the dam had not been definitely located. It does involve the relocation of a railroad, the moving of a little town, and that, I think, is one of the problems that should have serious consideration.

As a matter of fact, if this committee will be kind enough to hear them, there are folks who want to appear both for and against this project before you conclude.

WEBSTER DAM, KANS.

The Webster site has been mentioned by Mr. Lineweaver. As far as I know, there is no opposition, at least no general opposition to the construction of this reservoir. It is only 70 miles further west, and this is a guess, west of the Glen Elder project on the same stream. It has been a part of this proposed program for many years, and I would like to submit for the record a letter from the Stockton Chamber of Commerce, because here again enters into a question of the location of the dam site.

If you will permit me, I would like to read it. This is addressed to me. It reads:

DEAR SIR: In behalf of the Stockton Chamber of Commerce, I want to advise you we are against the Webster Dam project on the Solomon River at the Stockton location, which is just west of the town a mile or so. The reasons: It would

move our highway, U. S. No. 24, out of town. It would cover several thousand acres of our best farm land. It would subtract a large amount of our taxable valuation. It would give Stockton residents the insecure feeling of living just below a large dam. We would not benefit from irrigation that would start 12 or 15 miles on down the river. We are neutral on the question of building the dam at the original site, which was at Webster, about 15 miles west of Stockton.

We will appreciate very much anything you can do to discourage the building of the dam at Stockton.

Very truly yours,

STOCKTON CHAMBER OF COMMERCE,
By HOWARD F. WEBSTER, *President.*

I feel certain there would be no objection if the Bureau and the Corps of Engineers would agree on a definite location of the dam site as originally proposed in the earlier surveys. I think it would be a very worthy project to begin construction and meet with general approval.

Senator CORDON. I do not understand this thing. Here you have a $30 million project that may sometime irrigate 26,000 acres of land that is now being farmed without it.

If it is a reclamation project, it costs $125 an acre. They put water on the land that now does not need it, so it is clearly primarily a flood-control project.

It is incidentally and possibly irrigation. The whole thing is fantastic.

We have a division of Government whose job is flood control. We have been in flood control since there was flood control. Sidetracked here in another agency is this project whose business is in the agricultural field, in irrigation and reclamation, barging into flood control because in 1944, having two different plans, neither would concede the necessary priorities, so we married the two.

Senator HAYDEN. I cannot quite follow you there in that respect.

There was a marriage and they did agree. That being the case, it was a legitimate marriage.

Senator CORDON. This is not reclamation. This is flood control. We thoroughly agree with a good many instances where the primary objective was flood control. Yet I do not think the Senator from Kansas will agree they do not need irrigation in that area.

Senator CARLSON. I would like to say on this problem, and I know some of the difficulties the distinguished Senator from Oregon has mentioned, but out in our State we have had the finest cooperation between these two agencies. There has been no question as to division of work.

We constructed the Harlan Reservoir, or the Army engineers did, and it is to be dedicated in June. That has some reclamation in it.

The Bureau of Reclamation constructed the Cedar Bluffs project which has some flood control in it.

There is some area that can be irrigated and we need flood control.

Senator CORDON. There was testimony here there was not that cooperation that would have given the best results from the use of the dams. That is another problem you feel you have.

You are going to have a hydra-headed control here where you should have one control. You are going to have two different types of dams where there should be one.

The testimony last year from the Chief of Engineers concerning the dam they were building and some of the principles involved were foreign to him. He is an expert in flood control.

It leaves me wondering where we are.

Senator CARLSON. I do not want to get into any controversy with the distinguished Senator from Oregon, because he is making a good point. But we are in an area that is just on the division between the reclamation section and the flood control section. Some of this area has a very low rainfall, and some very high. It is a hard problem.

COST OF PROJECTS

Senator HAYDEN. What is the justification for the Glen Elder Dam?

Mr. LINEWEAVER. In response to your request, I had a statement prepared on the relative cost, capacity, and particularly the facilities requiring relocations between Glen Elder as compared with Webster, which was inserted in the record a few minutes ago. I will briefly summarize that.

The relative over-all costs are Glen Elder, $44,745,000; Webster, $21,167,000.

Senator CORDON. That is the cost of the Glen Elder project?

Mr. LINEWEAVER. Yes, sir.

Senator CORDON. You have 29 million here.

Mr. LINEWEAVER. This is a revised cost. We have reported to the House, Senator Cordon, the increased costs and those original costs were made up last fall.

Senator CORDON. I want you to put in the increased cost of the dam you are building too.

Mr. LINEWEAVER. Yes, sir; we will on Kirwin Dam.

(The information referred to follows:)

STATEMENT ON INCREASE IN TOTAL ESTIMATED COST OF GLEN ELDER UNIT

At the time of submission of the justifications for appropriations for fiscal year 1953, the plan of development for the Glen Elder unit provided for an earth-fill dam creating a reservoir capacity of 425,600 acre-feet and the irrigation facilities to serve about 26,000 acres of land. On the basis of preliminary information available at the time, the estimated total cost of the unit was $29,095,000, which included $23,500,000 for the dam and reservoir and $5,595,000 for the irrigation facilities. The record flood during the spring of 1951 necessitated a complete review of the Kansas River Basin plan of development, particularly from the standpoint of flood-control storage capacities and benefits. Even though this restudy had not been completed at the time of the hearings before the House Appropriations Committee, a detailed statement was submitted during those hearings explaining that on the basis of information then available, it appeared that it would be necessary to increase the reservoir from 425,600 acre-feet to 743,000 acre-feet to provide the necessary flood-control storage capacity. In this statement which appears on pages 1006–1008 of the hearings before the subcommittee of the Committee on Appropriations of the House of Representatives, Eighty-second Congress, second session, it was pointed out that providing this amount of additional storage would increase the total estimated cost of the unit from $29,095,000 to $40,000,000. The revised total cost included $32,000,000 for the dam and reservoir and $8,000,000 for the irrigation facilities.

The review of the flood-control requirements and allocations for the Kansas River Basin was recently completed by the Corps of Engineers. It has been determined that to provide the required flood protection along the Solomon River, Glen Elder Reservoir should be constructed with a total capacity of 1,280,000 acre-feet, of which 720,000 acre-feet will be for flood-control storage. Based on this increased capacity, the total cost of the Glen Elder Dam and Reser-

voir is now estimated to be $36,745,000 which, together with the $8,000,000 for the irrigation facilities, will result in a total estimated cost of $44,745,000 for the unit.

(Information on increased cost of Kirwin Dam appears later on pp. 645–646.)

CAPACITY OF RESERVOIRS

Senator CORDON. That was considerably over what you gave us last year. You told us those were late figures.

Mr. LINEWEAVER. That is probably true, but in accord with our policy of keeping the committees informed as to any increase of costs, we report them with regularity.

Senator CORDON. You should, and you should report the increased estimates with the same regularity and accuracy.

Mr. LINEWEAVER. Yes, sir; we try to keep up with it.

Senator CORDON. You did not do it last year.

Mr. LINEWEAVER. Webster current cost estimate is $21,167,000, including the irrigation features, and of the $44 million mentioned for Glen Elder, $8 million is for the irrigation features.

The reservoir capacity of Glen Elder is 1,280,000 acre-feet; Webster, 542,000.

HIGHWAY RELOCATION

One particular item that Senator Carlson asked me also to look into was the relative cost of the facilities requiring relocation. Glen Elder would require relocation of 17.6 miles of highway at a cost of $2,300,000.

The Missouri-Pacific Railroad, 20 miles of relocation, at a cost of $3,600,000.

A number of small towns, gas lines, et cetera, would have to be relocated which run up to a cost of some $11 million or $12 million, which accounts for some of the increased costs of Glen Elder.

However, the cost of relocations in connection with Webster, relatively small—some $700,000.

Senator CORDON. When you speak of Webster, which location are you talking about? There are two locations there.

Mr. LINEWEAVER. That would be the one near the town of Webster. So, the cost would be very much less at Webster in connection with removal of the town. As I understand, the location that is now favored is the one that Senator Carlson just mentioned.

Senator CORDON. Has that been agreed to by the Bureau and the corps?

Mr. LINEWEAVER. Constant cooperation and consultation at the field level has been carried on, Senator Cordon.

Senator CORDON. I am not too much interested in consultation. I am interested in the agreement.

BUDGET ESTIMATE NOT INCLUDED

Mr. LINEWEAVER. Let me make this statement: In view of the fact that Webster is not in the budget estimate, the matter of an agreement as to the dam site would have been premature, and so I am not able to tell you whether the field people have agreed on the site or not, Senator.

Senator CORDON. If there is a question about it, and I only know what I have heard here, you should have for the committee information on that subject. If there is no question, if we are going to build Webster, that is that.

We may not build it this year, but we may substitute, as I understand it. That is your views, that there may be some substitution necessary?

Senator CARLSON. Yes; I would favor the original site. I think there would have been considerable opposition to the proposed site.

Senator CORDON. The site at the town of Webster?

Senator CARLSON. Yes, sir. That is the original site.

Mr. LINEWEAVER. I have placed statements in the record concerning the relative situations at Glen Elder and Webster, Mr. Chairman, which were prepared at your request.

Senator CARLSON. I want to express my appreciation to this committee for this courtesy now and in previous sessions.

Senator CORDON. Senator, I assume you keep fairly well abreast of estimates that involve this vast flood area with which you had an unfortunate experience last year and came very close this year.

Are you advised as to whether the flood-control budget this year for the Corps of Engineers presents any requests for your area?

Senator CARLSON. No; I am not familiar with that. I have not checked it. We expect to appear before the Civil Functions Subcommittee when the opportunity presents itself. We have folks who want to be heard both for and against these projects again.

As I stated, we are in an area which has both agencies. It is because of the rainfall and the geography and the flooded areas that it makes one of our problems.

We have had splendid cooperation between the agencies. We have not had any difficulty. As former Governor of the State, I want to say both agencies were wonderful to work with.

Senator HAYDEN. In regard to the House report, I think it would be well to put into the record just what the status is with respect to new starts. I think we ought to know what the Department of Interior asked of the budget and what the budget allowed.

PROPOSED NEW CONSTRUCTION STARTS

Have there been any other requests? I would like to get this new start record in here if you can.

Mr. LINEWEAVER. Just briefly in introducing this statement, I would like to say that there were recommendation to the Budget Bureau last fall, which were all rejected except the substitution of Glen Elder for Webster, which we gave priority among our Kansas River dams.

Last Friday the Secretary made a new recommendation to the Budget Bureau for 11 new starts in addition to a supplemental estimate which had previously set forth a request for $2 million for completion of the emergency channelization of the middle Rio Grande project.

I will submit this list of new starts for the record and refer also to the record of the other new starts which had been placed in the House hearings.

Senator HAYDEN. That may be inserted into the record at this point.

(The material referred to follows:)

CONSTRUCTION AND REHABILITATION

Proposed new starts pending before the Bureau of the Budget

The following new starts have been transmitted to Bureau of the Budget as proposed amendments to fiscal year 1953 estimates of appropriations:

	Fiscal year 1953 estimate
Minidoka project, American Falls power division	$1,300,000
Missouri River Basin project, Yellowtail unit	6,812,000
Provo River project, Deer Creek power plant, substation, and transmission line	1,400,000
Yakima project, Roza division, Roza power plant	780,000
Central Valley project, Sly Park unit	2,536,800
Minidoka project, North Side pumping division	175,000
Missouri River Basin project:	
Lower Marias unit	4,200,000
Rapid Valley unit	2,135,000
Solano project	4,958,000
Yakima project, Kennewick division	2,560,000
Weber Basin project	1,350,000
Middle Rio Grande project, emergency channelization	2,050,000
Total, amendatory request	30,256,800

New starts included in 1953 request as submitted to Bureau of Budget

Project:		*Fiscal year 1953 allotment request*
Canadian River, Tex		$1,200,000
Carlsbad (Alamogordo spillway), N. Mex		416,000
Central Valley, Calif:		
CVP-BPA intertie		2,650,000
Sly Park Dam and conduit		2,350,000
Delta steam plant		4,800,000
Middle Rio Grande, N. Mex. (exclusive of emergency channelization)		8,904,000
Minidoka-American Falls power, Idaho		1,300,000
Minidoka-north side pumping, Idaho		603,000
Missouri River Basin:		
Owl Creek unit—Anchor Dam	$419,000	
Lower Marias unit	4,200,000	
Missouri diversion unit	4,530,000	
Yellowtail unit	6,812,000	
Webster unit	6,475,000	
Wilson unit	4,000,000	
Glen Elder unit [1]	6,200,000	
Belvidere unit—Angus Dam	1,000,000	
Sargent unit	1,136,000	
Bostwick division—Lovewell Dam	1,100,000	
Rapid Valley unit (Pactola Dam)	2,135,000	
Subtotal		38,007,000
Provo River, Utah:		
Deer Creek power plant		1,340,000
Utah Lake pumping plant		120,000
Solano, Calif		4,958,000
Weber Basin, Utah		3,250,000
Yakima-Kennewick, Wash		2,560,000
Total		72,458,000

[1] Included in budget for 1953 in amount of $3,620,000.

NEW STARTS POLICY

Senator CORDON. The Secretary believes as long as the Congress wants to vote for economy that they should be given a chance to vote for a lot of it.

Senator HAYDEN. I thought it all ought to be in the record. There will be a lot of citizens appearing here in regard to the various projects.

Mr. LINEWEAVER. We were requested by the chairman to submit charts showing the effect of the new starts policy on the reclamation program.

Senator HAYDEN. I am glad you fixed that up because I felt for a long time this engineering organization was exactly in the same status as the engineering organization of the Army.

If you are simply going to say there will be no new starts, simply finish up what we have, then there is no use maintaining the organization. It is just bound to dwindle and dwindle.

If we proceed at some reasonable rate in this construction as one project is finished, you can begin a plan for another.

How fast the appropriations go is something else Congress has to pass upon in view of the budget situation. I just cannot follow the line of reasoning that was adopted in the House when they said that the Corps of Engineers shall absolutely not have 1 cent and as far as I can understand there would not have been any more money this year than last year in gross.

This is why I think these charts are valuable.

Mr. LINEWEAVER. I will place in the record the correspondence requesting the chart and also the reply of the Commissioner, as well as a brief explanation of the chart.

Senator HAYDEN. That may be inserted into the record at this point.

(The material referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON APPROPRIATIONS,
March 31, 1952.

Mr. MICHAEL W. STRAUS,
Commissioner, Bureau of Reclamation,
Department of the Interior,
Washington, D. C.

DEAR MR. STRAUS: In connection with the testimony of yourself and Assistant Commissioner Lineweaver before the House Appropriations and Interior Committees on the fiscal year 1953 estimates there was a discussion of the new starts which the Bureau of Reclamation had submitted to the Bureau of the

Budget which were not, however, included in the budget as sent to Congress. It is my plan to explore this matter further at the time of the appearance of you and Mr. Lineweaver before the Senate Appropriations Committee, and it seems to me it would be helpful if a chart could be prepared to show the downward trend of reclamation appropriations under this policy and the reduced acres and kilowatts that will be coming in under the decreased tempo of reclamation construction.

Will you please arrange to have such a chart prepared and distributed to members of the Senate Appropriations Subcommittee for Interior in advance of the hearings. I suggest that you also be prepared to discuss at the hearings those authorized reclamation projects, or parts of projects, for which no funds are presently included in the 1953 estimates but for which the engineering and economic studies have sufficiently advanced to permit early initiation of construction should funds become available. This discussion should relate the desirability of proceeding with construction under present-day conditions to the high budgets and taxes needed for defense purposes.

Yours very sincerely,

CARL HAYDEN,
United States Senate.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., April 14, 1952.

Hon. CARL HAYDEN,
United States Senate, Washington, D. C.

MY DEAR SENATOR HAYDEN: In direct response to your letter and request of March 31, 1952, we have prepared a chart, copy enclosed, showing the "trend of reclamation appropriations" and its effect on amount of "acres and kilowatts that will be coming in under the decreased tempo of reclamation construction" resulting therefrom.

You will observe from the chart you specified that in the early years of President Truman's administration (the postwar, peaceful years) there was a steady acceleration of the reclamation development program reflected in peak appropriations in 1950, with resultant peak additions of new wealth-producing acres and kilowatts to the system in the following year of 1951. Since that time under the defense program, the chart (projected into the future of necessity under present policies) registers a steady decline.

We note your expressed intention to "explore this matter further" when the Interior Department comes before the Senate Subcommittee on Appropriations of which you are chairman.

Sincerely yours,

MICHAEL W. STRAUS, *Commissioner.*

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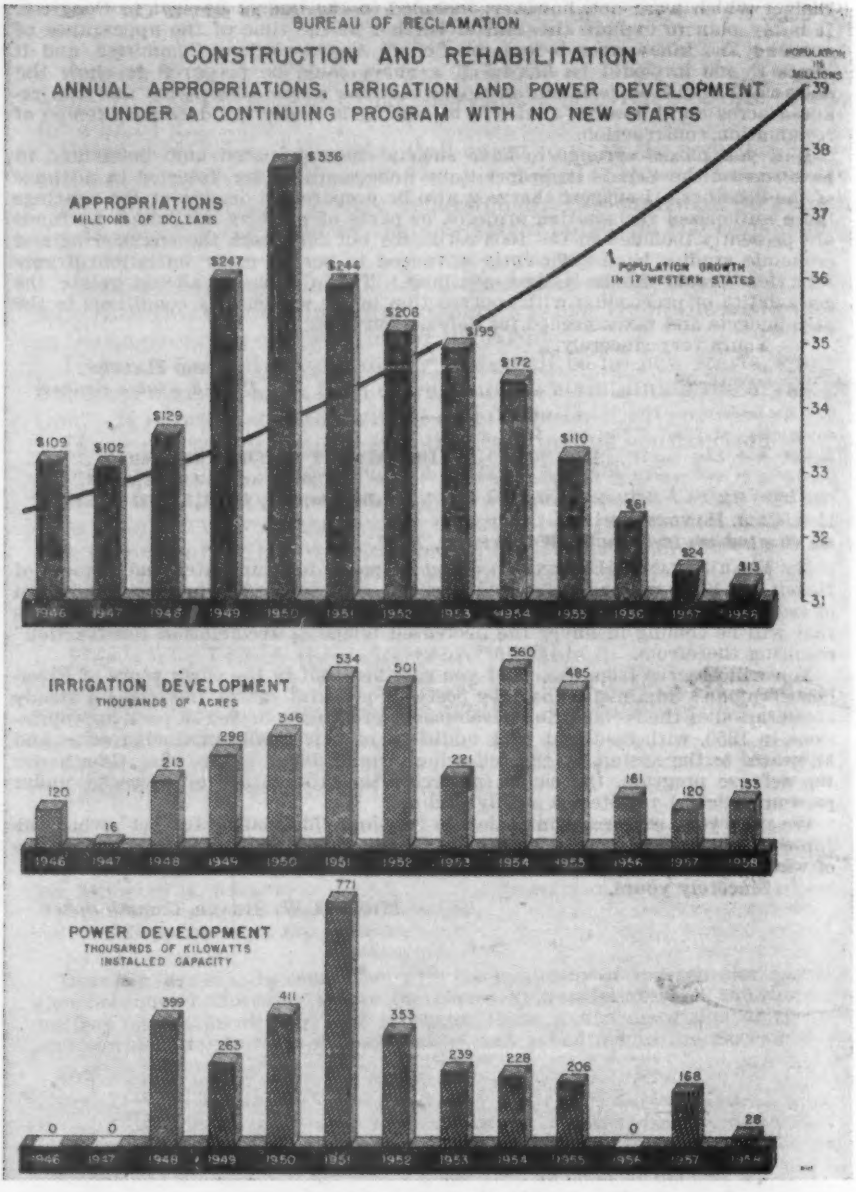

EXPLANATION OF CHART

The chart shows the appropriations made to the Bureau of Reclamation for construction and rehabilitation for the years 1946–52, inclusive, and projections of appropriations through the fiscal year 1958. The projection reflects a continuing program of no new starts for reclamation. The amounts shown for 1953 to 1958 are those funds required for completion of all work under way in fiscal year 1952 and the one proposed new start for 1953 of Glen Elder Dam.

Reclamation has always been considered directly related to the economics of the Western States which in turn are a direct function of population growth in those States. For comparison there is shown as a background against the appropriations the curve of population growth in the 17 Western States. This

curve ascends sharply upward at right angles to the projected downward line of appropriation estimates for the forthcoming six fiscal years.

More pertinent is the effect of the no-new-starts program on the irrigation and power development which are the two factors of reclamation which tie directly to population growth. Over a million acres are shown as receiving Government water for the first time in 1954 and 1955. This is a reflection of the completion of construction work placed under way immediately after the war. These large acreages are in the Central Valley, Columbia Basin, and Colorado-Big Thompson projects. After 1955 most of the acreage is in the Columbia Basin and Central Valley projects.

In power development the falling off of new kilowatts follows the decline in appropriations. The kilowatts for 1954 and 1955 represent completion of work in the Missouri Basin and Colorado-Big Thompson project, under way for some years previously. The chart in 1957 reflects the final unit at Boulder Canyon and part of the Palisades plant going on the line. The last unit of the Palisades project is shown by the small amount of power scheduled for 1958.

In summary, the chart shows quite conclusively that the reclamation construction program by 1956 will have fallen well below a reasonable annual expenditure and 2 years thereafter will be completely and thoroughly at an end. The lag behind appropriations in placing land under irrigation and creating new kilowatts, which this chart demonstrates, means that if acreage and kilowatt development is to be maintained at anything approximating the needs of the West then the appropriations of funds for new starts must recognize the time lag between appropriations and results. Funds are required several years in advance of the time the acreage and kilowatts are needed.

Construction and Rehabilitation

Contributions to national defense effort of proposed fiscal year 1953 new construction starts

(Statement requested in Senator Hayden's letter March 31, 1952, to Commissioner Straus)

Development of the water resources of the Nation is a firmly established national policy. During times of emergency, it may be necessary to defer certain desirable activities but even under these conditions, it is recognized that development must keep pace with our expanding economy and population. In addition, certain water-resource developments are of direct benefit to the defense effort and during an emergency period, should be expedited rather than slowed down. The 12 propsed new construction starts for fiscal year 1953 have been selected in the light of this criteria. They represent the portions of the Bureau of Reclamation's long-time program best suited to contribute to the defense effort in the shortest time and with the least expenditure of Government funds.

The following paragraphs briefly explain the contributions which will be made to the national defense effort by the new construction starts proposed for fiscal year 1953. It should be noted that the new starts discussed include projects, units of the Missouri River Basin project, and parts of projects under the Bureau of the Budget's definition of what constitutes a new start.

MINIDOKA PROJECT, IDAHO, AMERICAN FALLS POWER DIVISION

The American Falls Power Division will provide a substantial contribution to the defense effort in that, as a result of existing storage and power facilities, it will provide one of the quickest and most economical sources of hydroelectric power to help alleviate, by displacement of power now being imported, the power deficiency in the highly important production area of the Pacific Northwest. The American Falls power plant would also serve the increasing phosphate loads in southeastern Idaho which are a direct result of national-defense activities.

These early and economic benefits are possible as a result of the procurement of water rights and rights-of-way by the Government as early as 1923. Also, the American Falls Dam was built for the later addition of a power plant and such facilities as the penstocks are already constructed as part of the dam.

MISSOURI RIVER BASIN PROJECT, LOWER BIGHORN DIVISION, YELLOWTAIL UNIT, MONTANA

The contributions to the defense effort to be realized from construction of the Yellowtail Dam and power plant will largely result from providing an additional 200,000 kilowatts of generating capacity in a power-short area.

These contributions are summarized below:

1. *Extractive industries.*—Additional power will permit the expansion of important extractive industries in an area rich in proven mineral and petroleum resources vital to the Nation's defensive strength.

(*a*) *Chromium.*—Known resources in the Stillwater Complex (estimated at 11,000,000 tons of chromite) appear adequate to support two refining operations, each of which is estimated to require 15,000 kilowatts of high-load-factor power if ferrochrome is produced. If electrolytic chromium is produced, power requirements will be much greater. The stockpiling of ferrochrome from this source will greatly relieve the present necessity of relying largely on foreign sources.

(*b*) *Phosphate deposits.*—Known phosphate rock deposits, among the most extensive in the United States, occur in the Yellowtail market area, chiefly in southwestern Montana and central Wyoming. Studies by Federal agencies and private individuals or groups indicate a rapidly growing market for chemical products containing phosphorus, as well as an immense potential market within economic transportation distance for phosphate or mixed fertilizer for agricultural uses.

(*c*) *Sulfur.*—Large reserves of sulfur, both in solid form and in "sour" natural gas, occur in Wyoming. Processes for recovery of sulfur occuring in both forms have been developed, both processes requiring electric power. The shortage of this mineral has been growing increasingly acute. Its use in fertilizers in combination with phosphates is of great importance in maintaining agricultural production at a high level.

(*d*) *Coal.*—With foreign sources of oil in jeopardy, the vast reserves of lignite and subbituminous coal in the principal market area for Yellowtail power assume a great importance as a possible source of liquid fuels to supplement the available supply of natural petroleum. Several possible locations for fuel liquefaction plants have been considered. Power requirements are extremely large, and while some power is generated at the plant as a byproduct of the process, nevertheless a large supply of low-cost power from other sources is required to develop this method of producing liquid fuel.

(*e*) *Petroleum.*—The Bighorn area of Wyoming has long been recognized as an important oil-producing area. Recent new discoveries of oil in this area, and recently developed oil production in the Sussex-Midwest area of Wyoming, are creating an immediate demand for electric power for oil-well pumping, pipeline pumping, and repressurizing of oil fields. The recent discovery of oil in the Williston Basin area of northeastern Montana and northeastern North Dakota, in the light of development work accomplished to date, promises to place heavy demands for power upon the Bureau's facilities. The importance of long range development of petroleum supplies to replace foreign supplies cannot be overemphasized.

2. *Decentralization of industry.*—It will facilitate and encourage decentralization of defense industries, which are users of electric power in large quantities.

3. *Relief of power shortages.*—It will eliminate the power shortage which has prevented full development of resources of the Bighorn Basin area in Wyoming.

4. *Agricultural productivity.*—It will contribute to expansion of the Nation's agricultural productivity through irrigation of land and through labor-saving farm electrification.

5. *Maximum efficiency of total labor force.*—It will contribute toward more efficient utilization of the Nation's total labor force through more effective use of regionally immobile labor in decentralized and newly attracted extractive industries and through release of rural labor for defense industries.

6. *Flood protection.*—It will mitigate the danger of loss by destructive floods to the national wealth.

7. *Contribution to total national product.*—It will enlarge the long-range total product potential of the Nation by adding value to manufacturers from an otherwise wasted source of energy.

PROVO RIVER PROJECT, UTAH, DEER CREEK POWER DIVISION

The Deer Creek power plant and appurtenant facilities will make a substantial contribution to the defense effort in that it (1) will provide badly needed power in the proximity of several major defense installations, (2) will require a minimum of labor and materials, and (3) will provide an early additional source of power as a result of a short construction period.

The location of such installations as the Utah General Depot, the Ogden Arsenal, the Clearfield Naval Supply Depot, and the Hill Air Force Base near the Provo River project has brought about an increased population, thereby enlarging the demand for power as well as food and fiber. The Deer Creek power plant will help fulfill these requirements with a minimum of expense because the existing Deer Creek Dam as originally built included a power house, substation, penstocks, and other features to facilitate the installation of power facilities. With many of the required facilities already constructed, power capacity from the Deer Creek power plant can be made available 1 year after the original allotment of construction funds.

YAKIMA PROJECT, WASHINGTON, ROZA DIVISION, ROZA POWER PLANT

The need for the Roza power plant is evident from the close proximity of the Hanford Atomic Energy Plant. As a result of the location of this plant, the requirements on the Roza Division area to sustain the increased population has placed an added burden on the already deficient power supply. Construction of the Roza power plant will fulfill all of the Roza Division power requirements, thereby releasing power now being imported for use in other areas in the Pacific Northwest. In addition to fulfilling the division power requirements, the Roza power plant will provide an added contribution to the defense effort by furnishing power for export during the critical winter months of the year.

CENTRAL VALLEY PROJECT, CALIFORNIA, SLY PARK UNIT

Primarily as a result of the national defense effort, there has been a tremendous increase in the industrial activities and defense installations in the Central Valley of California and the adjacent areas. This expansion coupled with the accompanying increase in population have created a demand for agricultural and livestock products far in excess of local supplies. Furthermore, there are a number of industrial concerns in the Placerville area which are suffering from the present depletion of surface- and ground-water supplies. Typical of these industries is the Diamond Spring Lime Co. producing fluxing lime for several large steel companies. Further industrial expansion is impossible under the present conditions. The Sly Park Unit would therefore contribute to the defense effort by increasing the supply of agricultural products and by providing an adequate municipal and industrial water supply which would permit further industrial expansion to support the defense effort.

MINIDOKA PROPECT, IDAHO, NORTH SIDE PUMPING DIVISION

An expanding national economy, resulting primarily from the defense effort, is creating increasing demands for agricultural and livestock products. The North Side pumping division represents an excellent opportunity to increase the supply of these products within a relatively short period of time with a minimum of funds. Since the project does not involve any large or complicated structure, it will be possible to begin the irrigation of new lands the same year construction funds are made available and to bring under irrigation the remaining land at the rate of about 10,000 acres a year. The 69,500 acres of the division would make a very significant contribution in the way of additional food and fiber to support the defense effort.

MISSOURI RIVER BASIN PROJECT, MARIAS DIVISION, LOWER MARIAS UNIT, MONTANA

The lower Marias unit is located in an area of dry-farming operations where low crop yields and failures have been a common occurrence since the land was first homesteaded in 1910–12. Since 1945 there has been a definite downward trend in annual precipitation and another period of drought is apparently in the offing. The construction of the lower Marias unit would provide a dependable water supply for approximately 120,000 acres of dry-farmed land and would contribute to the national defense effort by increasing the agricultural and livestock

production to support this effort and by stabilizing and strengthening the economy of the Nation as well as the local area.

MISSOURI RIVER BASIN PROJECT, CHEYENNE DIVISION, RAPID VALLEY UNIT, SOUTH DAKOTA

The Rapid City Air Force Base has not had, since its establishment in 1942, an adequate water supply. Anticipated peak demand during the coming year is more than double the available supply. Water is essential not only for domestic use at the base, but for photographic laboratory, the aqua system of storing high-octane gasoline, maintenance of giant B–36's and B–36D's, etc. At the present time the Air Force base is required to rely on a very unsatisfactory source from wells of an average depth of over 4,000 feet which yield highly mineralized water at excessive temperatures of from 92° to 121° F. The necessary cooling, the corrosion of pipes, and treatment required present an expensive and continuing problem such as to make wells an entirely unsatisfactorily source of supply. Furthermore, Rapid City's municipal use taxed existing facilities in the comparatively cool 1950 season. Even with some newly constructed equipment, the city's supply is expected to be far short of the peak demands in the coming year.

The only satisfactory source of additional water which can be economically developed is through the Rapid Creek storage to be provided by Pactola Dam. Thus the Rapid Valley project would make a substantial contribution to the defense effort by providing an adequate water supply for the Air Force base and Rapid City and by increasing the food and fiber necessary to support such an effort through providing irrigation water for over 14,000 acres of land.

SOLANO PROJECT, CALIFORNIA

The cities of Fairfield, Suisun, and Vallejo are located in the Solano project area. These cities have had and are continuing to have a very rapid population growth with an accompanying demand for additional domestic and industrial water, primarily as a direct result of national defense establishments located in the area. Typical of these defense installations are the Travis Air Base, Benecia Arsenal, and the Mare Island Naval Shipyard. Presently available water supplies are inadequate to meet the needs of these cities and defense installations. Similarly, hard-pressed irrigators in the area are pumping from and already depleted ground-water reserve. The Solano project would make a major contribution to the defense effort by providing an adequate water supply for the defense activities and the cities in the area. It would also contribute toward the defense effort by increased production of food and fiber to support an expanded defense economy.

YAKIMA PROJECT, WASHINGTON, KENNEWICK DIVISION

The Kennewick division of the Yakima project is located immediately adjacent to the Hanford Works of the Atomic Energy Commission. In the same area the McNary Dam is under construction by the Army Corps of Engineers. The results of these activities have been twofold. First, the population of the area has increased over 300 percent since 1940, with an accompanying increase in the demands for power and for livestock and agricultural products. Secondly, the Atomic Energy Commission has acquired 290,000 acres in Benton County, of which 7,000 acres have been removed from agricultural production by reason of the Commission's activity. The Corps of Engineers is acquiring 9,200 acres for the McNary project, of which 2,400 acres are in the Columbia irrigation district.

The Kennewick division would make a real contribution to the defense effort by replacing the land to be taken out of production by these two projects, land needed to support the increasing defense activities and growing population in this area. Also the power produced by the Chandler power plant would aid in relieving the serious power shortage handicapping the defense effort in the Pacific Northwest.

WEBER BASIN PROJECT, UTAH

The Weber Basin project is designed to furnish water for irrigation, industrial, and domestic use in an area that has become the most important supply base for the armed services in the western United States. In the project service area are located the Utah General Depot, Ogden Arsenal, Clearfield Naval Supply Depot,

and the Hill Air Force Base. The depots and the arsenal constitute the western center for this type of activity serving the Pacific coast and Pacific overseas operations. Placed in this location for protection against possible west coast attacks, the services are continuing to increase and expand their substantial investment in facilities. A heavy population increase, primarily as a result of the local defense establishments, has placed a heavy burden on the existing sources of domestic water, industrial water and food, which promise to break down under the continuing increase in people and facilities now going on. As an example, the expanding Utah General Depot is dependent on the city of Ogden for its water supply, yet the city itself is critically short of water, in spite of above-normal precipitation. Drastic curtailment of the use of water is a certainty unless the Weber Basin project is completed.

MIDDLE RIO GRANDE PROJECT, NEW MEXICO, EMERGENCY CHANNELIZATION

The emergency channelization work is important to the defense effort in that it will conserve water, now being wasted, for storage in and use below Elephant Butte Dam. Water stored in Elephant Butte Dam provide for the generation of 24,300 kilowatts of power and irrigation of about 178,000 acres of fully developed land. The power generated at this dam is distributed to preference customers in lower New Mexico, including such defense establishments as the White Sands Proving Grounds and the Holloman Air Base. The agricultural products of this area, a major portion of which is cotton, are direct contributions to the defense effort.

The need for the additional water to be furnished by the channelization work at the headwaters of Elephant Butte Dam is evident from the low storage conditions being experienced at that dam. As the result of this condition, food and fiber production in the Rio Grande project area is being curtailed, and it was recently necessary to purchase power from outside sources to meet the minimum power delivery obligations.

ESTIMATED COST OF KIRWIN DAM

Senator CORDON. That kind of a graphic illustration brings the picture home a lot better than words.

Before we leave Kansas, I would like to ask Mr. Lineweaver whether he can tell us now what was the estimated cost of Kirwin Dam as it was justified last year and what your present figures are.

Mr. LINEWEAVER. I will submit that for the record, Senator Cordon.

There was an increase in the estimate as the drilling of the dam site progressed and after the preparation of the designs and specifications. I have the current figure and I will submit a complete analysis.

Senator HAYDEN. That may be inserted into the record at this point.

(The material referred to follows:)

STATEMENT ON THE INCREASE IN TOTAL ESTIMATED COST OF THE KIRWIN UNIT IN KANSAS

At the time of preparation of the justifications for appropriations to support the President's budget for fiscal year 1953, the total estimated cost of the Kirwin unit was $18,187,000 which included $13,975,000 for Kirwin Dam and Reservoir. The estimate, which was also the one used in support of the request for supplemental funds to start construction during fiscal year 1952, was based on a dam creating a reservoir of 200,000 acre-feet, of which 105,000 acre-feet was for flood control.

The record flood of 1951 necessitated a complete review by both the Bureau of Reclamation and the Corps of Engineers of the plan of development for the Kansas River Basin, particularly from the standpoint of flood-control requirements and benefits. While this study had not been completed at the time of the House hearings on the fiscal year 1953 appropriation request, a detailed statement was submitted to that committee pointing out that, on the basis of preliminary information then available, a reservoir with a capacity of 315,000

acre-feet would be required. This statement, which appears on pages 1012–1013 of the hearings before the subcommittee of the Committee on Appropriations, House of Representatives, Eighty-second Congress, second session, explained that on the basis of this reservoir capacity, which was subject to modification or confirmation by the Corps of Engineers, the total estimated cost of the Kirwin unit was $22,560,000 based on January 1952 prices. This amount included $17,660,000 for the dam and reservoir and $4,900,000 for the irrigation facilities.

The review of the Kansas River Basin plan has been completed by the Corps of Engineers. It has been determined that a reservoir of 315,000 acre-feet capacity will provide the required flood-control capacity and that the estimate of $22,560,000 for the total cost of the Kirwin unit is adequate.

Mr. GOLZÉ. The estimated cost of Kirwin Dam is $17,660,000.

Senator CORDON. That is the dam alone?

Mr. GOLZÉ. That is right.

Senator CORDON. Have you any contract of any kind for any irrigation in connection with it?

Mr. GOLZÉ. No, sir; the irrigation at present is included in the no new starts definition of the Bureau of the Budget.

Senator HAYDEN. Now, to get back where we were yesterday, does the program approved by the House show all the construction and rehabilitation items approved by the Bureau of the Budget?

CENTRAL VALLEY PROJECT TRANSMISSION LINES

CAMP STONEMAN SUBSTATION, CALIFORNIA

Mr. LINEWEAVER. No, sir. We have discussed the Glen Elder and Webster proposition and now I would like to have Mr. McPhail discuss the transmission lines that were omitted by the House in its report.

Mr. MCPHAIL. There were four electrical features which were eliminated by the House in its consideration of the bill. One was the Camp Stoneman substation in the Central Valley project in California. In that case we have a transmission line as indicated on the map on the wall passing directly through the area of Camp Stoneman.

Senator HAYDEN. How long has that transmission line been built?

Mr. MCPHAIL. Some 3 or 4 years now. It was built originally in connection with the pumping on the Contra Costa canal.

Senator HAYDEN. How come if you had a transmission line in there that you did not get the business instead of the Pacific Gas & Electric Co.?

Mr. MCPHAIL. We do have the business, as such. The deliveries are presently being made under the wheeling agreement with the Pacific Gas & Electric Co.

Senator HAYDEN. What I am trying to get at is the Pacific Gas & Electric Co. undoubtedly had transmission lines that would get into Camp Stoneman, and you had a transmission line. Was it because they had power they were able to deliver and you did not?

Mr. MCPHAIL. They did have the power, but we did not have the transmission line connection until just this last year. The extension of this line over to the east of the map connected into our switchyard at Tracy. That connection has now been completed and with the substation we would be in a position to render direct service.

Senator CORDON. What have you been using the line for if it was not connected?

Mr. MCPHAIL. We used the line under a temporary agreement with the Pacific Gas & Electric Co. to supply power for pumping on the Contra Costa canal. We had a connection to the Pacific Gas & Electric system near those plants.

Now, we have completed the connection with our own system directly so that our power for that pumping flows directly to this area.

COST OF SUBSTATION

The proposed substation would be located only a few feet from the existing line. Our particular contention in this connection is that the United States can save money by putting an investment of $60,000 in this substation.

A study indicates that the service will save the Army about $3,000 a year on its bills and would save the Bureau about $3,800 on its transmission costs, or a total annual saving to the Government of approximately $7,000 a year.

HOUSE REPORT

Senator HAYDEN. The House report reads:

> The substation additions eliminated were for the purpose of providing Government power direct to Camp Stoneman. Testimony given to the committee indicates that the camp is being adequately supplied by the Pacific Gas & Electric Co. at the present time.

Apparently from your statement up until the present time it would have been impossible for you to take at least Government generated power and deliver it to the dam. Am I correct?

Mr. MCPHAIL. That is correct.

Senator HAYDEN. As far as the situation was concerned when the camp opened and began operation, the Pacific Gas & Electric Co. was the only utility that could promptly give them the power they wanted.

Mr. MCPHAIL. That is true.

Senator HAYDEN. That is how they got in.

POWER WHEELING CONTRACT

The next argument I would like to have you answer is this: They say you made a wheeling agreement that covers the entire valley. This is one of the short hauls that they could make some money on.

On the other hand, if they had to deliver power over their lines down to Bakersfield, or some other great distance at the wheeling rate agreed upon, they would make no profit on that. So they must have these short hauls as long as the long hauls in order to make the agreement profitable to them.

In other words, they object to your picking out the short hauls where you can make money and requiring them to take the long hauls.

Mr. MCPHAIL. The facts are, Mr. Chairman, practically all of the potential services to preferred customers in the Central Valley area will be short hauls, not as short as this one, because here is one where the line passes right through the camp.

But in general they will all be short hauls. It was made quite plain in our negotiations with the Pacific Gas & Electric Co. that we did propose, where economics showed it to be favorable to the Government, to request funds for our own facilities. This is simply a matter of good business.

While the wheeling agreement covers a large area, the customers that appear to be potential are mostly short hauls. Power is delivered into the Pacific Gas & Electric Co. so that the company will save transmission losses on a good deal of its own power because of the point of introduction of our power into its system.

Senator CORDON. Some of them would be long hauls if you had to haul it?

Mr. MCPHAIL. Most of them would not be very long hauls, Senator Cordon.

Senator CORDON. Where would your power originate over the Central Valley? You have it at Shasta.

Mr. MCPHAIL. We originate, at the present time, all of our power at Shasta.

Senator CORDON. It is quite a ways from Shasta to Bakersfield.

Mr. MCPHAIL. I know of no potential-preference customer at Bakersfield at the present time.

Senator CORDON. The contract would permit it?

Mr. MCPHAIL. Yes, sir.

Senator CORDON. It is clear to me what you are attempting to do. It is a matter of good faith.

Senator HAYDEN. What is the next item that you want to take up?

MISSOURI RIVER BASIN TRANSMISSION LINES

SIOUX CITY-OMAHA LINE, IOWA-NEBRASKA

Mr. MCPHAIL. There are three transmission-line items, all in connection with the Missouri Basin project. The first is a 230,000-volt transmission line from Sioux City to Omaha. This transmission line is a part of the Bureau of Reclamation's main backbone grid transmission system designed to transmit power to the load centers.

Senator CORDON. From where?

Mr. MCPHAIL. We now have a line approved and money appropriated for it by the Congress from Fort Randall to Sioux City. This line is an extension of that line from Sioux City, Iowa, to Omaha, Nebr., as indicated in red on the lower right-hand portion of the map.

Senator HAYDEN. You bring the power down on existing lines from Fort Randall to Sioux City?

Mr. MCPHAIL. The line is now under construction.

Senator HAYDEN. Then the Sioux City power would come across the river and come into Omaha; is that correct?

Mr. MCPHAIL. That is correct.

PREFERENCE CUSTOMERS

One of the important potential-preference customers in that area is the Omaha Public Power District which is the largest power agency in the State of Nebraska at the present time, as far as generation is concerned.

Senator HAYDEN. Let me get this Nebraska situation straight. I understand all of Nebraska is a public-power area?

Mr. MCPHAIL. That is correct.

Senator HAYDEN. But the State itself had been divided into different sections and served by different power districts. In other words, there is no State-wide power system?

Mr. MCPHAIL. There is no State-wide power system. The set-up is somewhat complicated. The Omaha Public Power District has a definite area which it supplies. In the major part of the eastern two-thirds of the State, there is one public-power group known as the Nebraska Public Power System, which is primarily a generation and transmission agency.

Then they have also in that same area the Consumers Public Power District which is again a public power agency that handles distribution and handles retail sales in large measure in most of the cities in that area.

In the western one-third of the State the Consumers Public Power District is the only State agency that operates in that territory. But all of the State is public power in one class or another.

There are a good many municipal operations. There are a number of REA operations.

Senator HAYDEN. In this particular instance you are not dealing with the State of Nebraska as a whole; you are dealing with a unit located in and around Omaha that is a large consumer of power. Is that right?

Mr. MCPHAIL. That is correct.

Senator HAYDEN. It is, therefore, under the law, a preference customer?

Mr. MCPHAIL. That is correct. Also this same location provides an opportunity for sending power into the Nebraska public power system which itself has the major part of its steam generation located in the vicinity of Omaha at a place called Bellevue.

Senator HAYDEN. Would you work an arrangement there like one worked out in Oklahoma where you furnish the peaking power at certain seasons of the year? Would they firm up the hydropower at these dams?

Mr. MCPHAIL. We certainly contemplate the type of contracts which would provide the maximum of firming. The power situation in the Missouri Basin can hardly be compared with that in the Southwest Power Administration area because in the Missouri Basin large blocks of firm power will be available for sale.

Also we will have very considerable secondary energy which can be used as a fuel saving measure and provide savings to those people who have fuel generation.

Senator HAYDEN. Practically all of this Nebraska power now is generated from fuel, is it not?

Mr. MCPHAIL. The big share of it is, but they do have a substantial amount of hydroelectric power in the State. The majority, however, is fuel.

Senator HAYDEN. In any event, if they could take your secondary power and shut down the steam plants, it would be advantageous to you to sell it and advantageous to them in lowering their steam costs?

Mr. MCPHAIL. That is correct. That is a benefit in addition to the firm power which would be available also.

Senator HAYDEN. What is the necessity for appropriating the money for this line now?

POWER PLANTS

Mr. MCPHAIL. The Fort Randall power plant, the first one due to come in in the Missouri Basin, will have its first unit in operation in November 1953. This unit will have 40,000 kilowatts of capacity.

Senator CORDON. How much in 1953 will come in?

Mr. MCPHAIL. Forty thousand kilowatts in November 1953 with a 40,000-kilowatt unit to be added each 4 months thereafter until the full capacity of Fort Randall, 320,000 kilowatts, is in.

Also immediately below the Fort Randall Dam is Gavins Point, which is expected to be finished in 1956. It will have a capacity of 100,000 kilowatts.

Senator HAYDEN. There is no question about the ultimate power. The question is, does this line have to be built this year? The House does not give any explanation as to why they postponed it.

Mr. MCPHAIL. Primarily it is a matter of materials and equipment deliveries.

In order to make this power available, we will have to have substations involving transformers. They are one of our most critical items now and require somewhere around 800 to 1,000 days for delivery.

So that we must get orders placed which will involve payments as we go.

Senator HAYDEN. Would you pay out anything on the orders during the next year?

Mr. MCPHAIL. Yes; we would pay some out on the orders. We also would do considerable work on the line itself in the way of surveys, designs, acquisition of rights-of-way, and we would hope to let a contract for construction by the end of the fiscal year.

FUNDS FOR SIOUX CITY-OMAHA LINE

Senator HAYDEN. How much of $1,476,000 do you think you would actually spend during the fiscal year?

Mr. MCPHAIL. We think under a reasonable program we can use that much money on the line during the year.

Senator HAYDEN. The total cost of which would be what?

Mr. MCPHAIL. The total cost is $5,501,000 for the line and related substations.

Senator HAYDEN. That sounds to me like a 3-year job.

Mr. MCPHAIL. That is about right.

So we should get it started this year, and we should have it completed by the winter of 1955, which is the peak-load period in the area when you need capacity.

By that time we should have in Fort Randall 200,000 kilowatts of installed capacity.

Senator CORDON. That is quite an installed capacity, but what can you say about energy?

Mr. MCPHAIL. Energy will not support 200,000 kilowatts on a firm continuous basis, but there will be large quantities of energy.

I am sorry I do not recall offhand just what that amounts to.

Senator CORDON. I think that is the most important part of your presentation. If you are going to justify a line, you are going to justify it by what comes out at the far end, not what installed capacity is.

That means information as to what kind of an electrical transmission set-up you are going to have from that dam. Clearly a flash-flood dam that is devoted to flood control will have at times a real potential in energy. At other times it will not. You are going to get the best out of it by a low load factor. Those things are primary.

You have already stated in this area you have a very considerable volume of firm energy. You have some secondary from here, there, and yonder. You want to deliver this to supplement existing supply.

CAPACITY OF LINE

What can we expect to come over this line?

Mr. MCPHAIL. The studies that have been made with the Corps of Engineers in connection with water supply from Fort Randall indicate a minimum, depending upon the water conditions, of 140,000 kilowatts in the winter of 1954; 185,000 kilowatts in the winter of 1955. That is as against a 200,000-kilowatt installation as of the winter of 1955.

Senator CORDON. Do you mean 140,000 kilowatts of energy firm?

Mr. MCPHAIL. Yes, sir; 140,000 kilowatts of energy will be essentially 100 percent firm for the load in the area as of that time.

Senator CORDON. Is that true 185,000?

Mr. MCPHAIL. Yes, sir.

Senator CORDON. You will have a 200,000 installation, 185,000 firm?

Mr. MCPHAIL. Yes, sir; at that time.

Senator CORDON. What do you mean "at that time"?

Mr. MCPHAIL. Because the installation in the Fort Randall plant is planned to be 320,000 kilowatts in total. The usefulness of that capacity is closely related with Gavins Point immediately below where the full peaking capacity of Fort Randall Dam can be used.

The water will be caught again at Gavins Point and then reregulated for uniform flow down the river.

Senator CORDON. You have Gavins Point and there has been a great increase in usefulness of Fort Randall.

Senator HAYDEN. It is your judgment that this money is necessary now. Supposing you do not get it. What happens?

Mr. MCPHAIL. It would involve a delay in the time we could finally get the line in.

Senator HAYDEN. Would the delay mean loss of revenue to the Government from power available for sale that could not be delivered?

Mr. MCPHAIL. It certainly offers that possibility.

Senator HAYDEN. We had in Arizona a situation in connection with the Davis Dam. We contemplated when it would be finished. The backbone transmission would take it away and was completed at about the time the power was available.

Actually the transmission line was behind the power. It worked out all right. If we had not looked ahead and had the transmission line ready, there would have been power at Davis Dam that we could not have obtained.

So the two things have got to go along together.

Mr. McPHAIL. That applies here. We have to get sufficient outlets to make the capacity available in order to get the earliest returns in the sale of power.

WHEELING AGREEMENTS IN FORT RANDALL POWER AREA

Senator CORDON. Do you have any wheeling agreements in that area?

Mr. McPHAIL. At the present time we have wheeling agreements in both North and South Dakota to the north of the dam. We have a wheeling agreement essentially agreed upon, but the contract has not been actually executed within Nebraska itself with the Nebraska public power system.

Those are the only ones we have in the area.

Senator CORDON. There are none in Iowa or South Dakota?

Mr. McPHAIL. There are none in Iowa.

Senator CORDON. You have some arrangements in North Dakota?

Mr. McPHAIL. Yes, sir.

Senator CORDON. Could you give the committee an idea of the service area around Fort Randall that has some relation to the available market there?

It is a long way to take that power to Omaha with the kind of a market you have got. It is many, many miles closer to your outlet.

Mr. McPHAIL. The economic transmission distance for that power, in our opinion, is from 250 to 300 miles. That distance gets us pretty closely down to the southeastern corner of Nebraska.

Senator CORDON. But, of course, if you owned that power outlet and you were going to sell it and it made a difference of how many dollars were in your pocket, would you transmit that power 250 to 300 miles if you could sell it in the area within 100 miles?

Mr. McPHAIL. It cannot all be sold according to our market studies at any distance substantially less.

Senator CORDON. That is an area that is not power hungry?

Mr. McPHAIL. It is a power-shortage area. But the magnitude of the developments proposed on the Missouri Basin as compared to the load in the area is quite large.

INSTALLED POWER CAPACITY

Altogether in South Dakota we finally expect an installed capacity approaching 1 million kilowatts between Oahe, Gavins Point, Fort Randall, and Big Bend.

Senator CORDON. The Oahe is just beginning?

Mr. McPHAIL. That is expected to be in operation by 1960.

Senator CORDON. You are still talking about capacity rather than energy?

Senator HAYDEN. As I understand the situation in South Dakota and northern Nebraska above Omaha, you have an agricultural region. You do not have large cities. While those farmers in that area are power hungry, still as compared to a place like Omaha they would not have the ability to buy the power. They could not use as much as in an industrial area; is that correct?

Mr. McPHAIL. That is correct. The area is largely agricultural in all of South Dakota and most of Nebraska. It is necessary in those

areas to go farther in order to pick up greater loads, loads of sufficient magnitude to dispose of what we will have available.

NEBRASKA POWER SHORTAGE

Senator HAYDEN. Omaha is one place where you will sell a considerable block of power?

Mr. MCPHAIL. Omaha is the place that offers a good opportunity to dispose of a large block.

I might say Nebraska is quite power-short. The Nebraska Public Power System has very recently advised the necessity on its part to put in another 60,000-kilowatt unit in a steam plant unless there is assurance that it can get hydropower to the extent of at least 40,000 kilowatts by the winter of 1954.

Senator HAYDEN. There is one more item left out, the Minnesota program. Senator Thye was here in regard to the matter one day.

TRANSMISSION LINES TO MINNESOTA

There are some gentlemen coming in from the area to be heard in the next few days.

What is the status there? The House omitted $2,913,000.

Mr. MCPHAIL. This is the proposed backbone transmission line that ultimately would connect the Fort Randall and Garrison power plants. The line has an important influence on power service in western Minnesota. It is a feature which was agreed upon as being desirable, and the Bureau was requested to construct the line by 16 REA cooperatives and 3 private utilities operating in the area.

Senator HAYDEN. How much is the line going to cost altogether?

Mr. MCPHAIL. The total line costs $54,000,000 with the substations involved. It is a very major development.

Senator HAYDEN. Is that the long line on the map there?

Mr. MCPHAIL. It is the long red line that is on the right-hand portion of the transmission system on the map. The agreement of all the people in the area in connection with the line is substantiated by a letter which I would like to have in the record, if I may, Mr. Chairman, which indicates their desires in that connection.

(The material referred to is as follows:)

WASHINGTON, D. C., *December 4, 1951.*

Mr. MICHAEL W. STRAUS,
Commissioner, Bureau of Reclamation,
Washington, D. C.

DEAR MR. STRAUS: The following farm electric cooperatives, 16 in all, and 3 private electric companies, all now operating facilities in the State of Minnesota, wish to confirm our plan outlined at the conference today with members of your staff in Washington, D. C.

This plan represents agreement between the cooperatives and the companies and was developed as the result of numerous conferences during the past 2 years. The cooperatives and the companies join in a request to the Bureau of Reclamation that it will revise its planned 230,000-volt transmission line and substations in western and southern Minnesota in accordance with the following plan.

This line would run generally from Garrison Dam in North Dakota to Fargo, Fergus Falls, Benson, Granite Falls, Mankato, and thence southerly and westerly serving southwestern Minnesota, and continuing to a suitable connection with Missouri River Basin power system. Substations from this line would be established generally at or near Fargo, Fergus Falls, Benson, Granite Falls, Mankato, and Jackson.

This plan pledges our full and complete cooperation with the people of Minnesota in obtaining their full share of whatever benefits may be available from the Missouri River projects and at the lowest cost to the public. Our plan calls for teaming up the lines of the cooperatives and companies with those of the Government to utilize the groups' facilities for the most economic operation.

United support for this 230,000-volt line is the heart of the plan. Specifically this is how we visualize its working. The Government would build and own the 230,000-volt trunk line and send power from its Missouri River dams over the line on the first leg of its trip to the consumer. At appropriate points mentioned generally above the big line would be tapped and power put into the lower voltage lines of the cooperatives and the companies. Then over available lines the interested parties would team up to deliver the power to the ultimate users. This plan, in our opinion, will give Minnesotans assurance that both the companies and the cooperatives are endeavoring to do everything possible to get Missouri River power for use in Minnesota at the lowest cost to the public. The plan was developed after engineering studies by the cooperatives, and the companies demonstrated that integration of their own lines with those of the Government would be entirely feasible. Municipal power systems would also have an opportunity to participate. In addition, we would point out that this plan, in our opinion, would conserve construction materials now in critically short supply.

Please convey to Mr. McPhail and his staff our appreciation for meeting with us and advising us. You may be assured if this plan is submitted to the Budget Bureau and to the Congress that you may call on us for our wholehearted support.

Sincerely yours,

Victor Hanson, Secretary of Group of 16 Cooperatives: Agra Lite Cooperative, Traverse Electric Cooperative, Runestone Electric Cooperative, Lyon Lincoln Electric Cooperative, Nobles Cooperative Electric, Steele Waseca Cooperative Electric, Brown County Rural Electric Association, Todd-Wadena Power & Light Cooperative, Lake Region Cooperative Electric Association, Minnesota Valley Cooperative Light & Power Association, Renville Sibley Cooperative Association, Southwestern Minnesota Cooperative Electric, Federated Rural Electric Association, South Central Electric Association, Central Minnesota Cooperative Power Association, Blue Earth-Nicollet Cooperative Electric Association; Carl T. Bremicker, Vice President, Northern States Power Co.; Albert V. Hartl, Secretary-Treasurer, Otter Tail Power Co.; C. A. Hummel, Vice President, Interstate Power Co.

WHEELING AGREEMENT NEGOTIATIONS

Senator KNOWLAND. Is there a wheeling agreement in that area?

Mr. MCPHAIL. No, but the power companies have offered to enter into agreements for wheeling with the idea that the Federal Government will build this needed high-voltage line. The companies and the REA's would make their lower-voltage facilities available so the power in turn could be distributed to the preference customers as well as private utilities in that area.

Senator CORDON. Last year the same companies offered to do it all.

Senator HAYDEN. I do not think so. It was indicated last year there was some connection at Sioux City for certain parts of Minnesota.

Mr. MCPHAIL. In the hearings last year the power companies took objection to an appropriation for the Bureau which at that time contained largely 115,000-volt lines. They said they could do that part of it, but they have never indicated their willingness or ability to build the 230,000-kilovolt backbone line which runs through areas they do not serve in good part and have no responsibilities for service.

Senator HAYDEN. There was complaint at the time we had the hearings from the farm cooperatives in western Minnesota and eastern

South Dakota and North Dakota that they were not adequately served. Apparently from this long list of cooperatives they think they will be served from this line. Will they step it down?

BACKBONE TRANSMISSION LINE

Mr. McPHAIL. We propose to build the backbone line. The cooperatives have considerable lower voltage transmission of their own as do the utilities.

Senator HAYDEN. Does it have to be built this year?

Mr. McPHAIL. It should be built as soon as possible. At present they have a shortage of power, in certain parts of that area. They have some excess capacity in other parts.

If the backbone line is built so they can connect with it, then they can better distribute the power they now have which will permit the area to handle its load until such time as the Federal plants come in on the Missouri River.

Senator HAYDEN. That is more or less a repetition of what we did when we made that big loop in South Dakota. The private power companies fed into it and tried to meet the situation pending the time power was available at Fort Randall.

Mr. McPHAIL. That is correct. It is the same kind of a situation.

Senator HAYDEN. You propose to send some power to Omaha. When will it be possible to actually supply all the power that will be required over this line from Fort Randall? Would you have to wait until Gavins Point was finished?

Mr. McPHAIL. The first time when a sizable block of power will be available to go on this loop in Minnesota would be when the Garrison power plant comes in, which is the spring of 1955.

There might be some interchange of power in 1954 by reason of Fort Randall output if the facilities could be completed by that time.

Senator KNOWLAND. Assuming you had all the necessary funds, how long would it take to build this line?

Mr. McPHAIL. Due to the time required for transformer deliveries, it will take about 3 years. Transformer deliveries are in the neighborhood of 800 to 1,000 days at present.

Senator KNOWLAND. How about the actual construction of the line itself?

Mr. McPHAIL. The construction of the line itself we would propose to program in consultation with the people in the area. We would build those stretches first which might be temporarily operated even at some lower voltage, to give them the relief they want.

Senator KNOWLAND. My question is how long would it take to build the line itself if you had all the money available at once?

Mr. McPHAIL. That would be entirely dependent upon the delivery of materials. The actual construction work could be done in 2 years, but with the time required to get delivery on critical materials now, we think it would require a good 3-year program, if properly planned, to finish the lines.

LENGTH OF LINE

Senator KNOWLAND. How many miles are involved?

Mr. McPHAIL. There is a total of 726 miles.

Senator KNOWLAND. Have you ever built 726 miles of line in less than 2 years?

Mr. MCPHAIL. No, sir.

Senator HAYDEN. We have covered what the House left out.

BILLINGS-YELLOWTAIL LINE, MONT.-WYO.

Mr. MCPHAIL. One other item that the House left out, Mr. Chairman, is a line from Billings, Mont., to the Yellowtail dam site. This transmission line would interconnect with the Lovell-Yellowtail transmission line for which funds have previously been provided and would complete an interconnection from Billings, Mont., to the Bureau system in northern Wyoming. It is a part of the ultimate backbone grid system that will be required when Yellowtail Dam finally comes in.

Senator HAYDEN. That would cost $875,000 according to the estimate for this year. What is the total cost?

Mr. MCPHAIL. $1,300,000.

Senator HAYDEN. How long will it take to build it?

Mr. MCPHAIL. That line can be completed in two working seasons. We can get it completed by the late fall of 1953.

Senator CORDON. What is the length of the line?

Mr. MCPHAIL. Forty-four miles.

SIOUX CITY-OMAHA LINE

Senator CORDON. What is the length of the line from Sioux City to Omaha?

Mr. MCPHAIL. One hundred seven miles.

Senator CORDON. What is the voltage on that line?

Mr. MCPHAIL. Sioux City to Omaha is 230,000 volts. From Billings to Yellowtail is 115,000 volts.

COST OF BILLINGS-YELLOWTAIL LINE

Senator CORDON. It costs $1,300,000 for the Yellowtail and how much for the Omaha-Sioux City?

Mr. MCPHAIL. $5,501,000.

The primary need for the Billings-Yellowtail line at this time is the power situation in northern Wyoming. This area is largely supplied by power from Federal developments. It is a power-short area now but will be temporarily relieved by the Boysen power plant of 15,000 kilowatts which is due for operation this summer.

POWER PLANTS

Our studies indicate it will again be a power short area by the winter of 1953.

We will have a power plant coming in Montana, our Canyon Ferry power plant, by that time.

We also have the Fort Peck power plant operating there.

We propose by interchange with the Montana Power Co. to have some of that power transferred to northern Wyoming to relieve the situation until the Yellowtail Dam is constructed.

Senator CORDON. Does the Montana Power Co. operate in northern Wyoming?

Mr. McPHAIL. No, sir; there is no interconnection from Montana to Wyoming.

Senator CORDON. Is there any company in that area?

Mr. McPHAIL. Yes, sir. The Mountain States Power Co. operates in northern Wyoming. With the exception of one Diesel plant of about 1,000 kilowatts capacity and a small steam unit of about twenty-four hundred kilowatts capacity, it purchases all of its power from the Bureau.

Senator CORDON. Does Mountain States purchase it from the Bureau?

Mr. McPHAIL. Yes, sir; it has for many years.

Senator CORDON. Where does the Bureau get it?

Mr. McPHAIL. The Bureau gets it from its interconnected system in Wyoming, Colorado, and Nebraska, which involves plants on the Shoshone, Riverton, Kendrick, Big Thompson, and North Platte projects.

Senator CORDON. The Colorado-Big Thompson has not been in operation very long, has it?

Mr. McPHAIL. It has had one plant that has been in operation for quite a number of years, the one on the west slope.

Senator CORDON. You have a power company there that is nothing but a distribution company.

Mr. McPHAIL. That is correct.

Senator HAYDEN. I would much rather have them distribute it than the Government.

Senator CORDON. I have no objection. I am wondering how long they are going to last when they get all these lines in.

Mr. McPHAIL. The Mountain States Power Co. has been getting its power supply from the bureau for well over 20 years now.

Senator CORDON. Is that a fact?

Mr. McPHAIL. Yes, sir.

Senator CORDON. I did not know you had any power in that area 20 years ago.

Mr. McPHAIL. I started work with the bureau in that area in 1919. We built a power plant first on the North Platte project, and then one in 1921 and 1922 on the Shoshone project.

I know we have had it that long.

Senator KNOWLAND. You have almost as much seniority in that field as Senator Hayden does in the Senate.

BILLINGS-YELLOWTAIL LINE

Senator CORDON. Mr. Chairman, what was the view of the House with reference to this building of the Yellowtail line?

Mr. McPHAIL. I do not recall the statement they made.

Senator CORDON. Was there any objection before the House?

Mr. McPHAIL. I am not familiar with it. There is no competing line in the territory.

Senator CORDON. Yellowtail as you have it on the map represents a power generation site, does it not?

Mr. McPHAIL. That is right. It is a potential site for a dam with an installed capacity of 200,000 kilowatts.

Senator CORDON. Does that mean you are not constructing the dam yet?

Mr. McPHAIL. Not yet. It is an authorized dam in the Missouri Basin, but we have not started construction.

Senator CORDON. When you get to Billings, you tie into an existing Bureau transmission line at Billings?

Mr. McPHAIL. No, sir.

Senator CORDON. You have a wheeling agreement?

Mr. McPHAIL. Yes, sir.

Senator CORDON. That wheeling agreement would connect Billings and when you get it finished, Canyon Ferry?

Mr. McPHAIL. That is right.

Senator CORDON. Does Fort Peck come into that picture?

Mr. McPHAIL. Yes, sir.

Senator CORDON. Is there in existence any line or lines between Yellowtail and Billings that would permit of the wheeling of your power between those two terminals?

Mr. McPHAIL. No, sir.

Senator KNOWLAND. It would be very helpful if on these maps they bring us they could show the existing transmission lines of the private companies so that we could see where there are major gaps and where there are duplicating facilities.

Mr. McPHAIL. In that area the only existing line is one that is owned by the Montana Power Co. that runs almost due east from Billings to a little town called Hardin.

Senator KNOWLAND. As far as we can see on the map, with the exception of the bureau lines and the proposed lines, you could not tell there was any power facility in any of those States?

I do think it would be helpful in presenting a better picture.

Senator CORDON. You might put them in light dots so that you can emphasize the bureau.

HOUSE ACTION ON TRANSMISSION LINES

Mr. LINEWEAVER. Senator Cordon, the House committee did make this comment with respect to the Yellowtail-Billings line and the Sioux City-Omaha line.

It said that they were denied last year, and the committee was given no justification this year adequate to alter its position.

With respect to the Minnesota program, the House committee report had the endorsement of both the private utilities and the cooperatives throughout the area to be served.

However, the committee was not convinced for the need for construction of the proposed line with Federal funds.

You asked what comment the House made. That was the comment, sir.

Senator CORDON. It is a strange thing they were going to take that position, and they were not convinced there was adequate justification for that Minnesota loop.

I understand the power companies in there would be satisfied to have the Government build all their lines if they left them in their control. That is human nature.

On the other hand, maybe they can build them. Maybe they would build them, but maybe they cannot and will not. We need information in that field.

Mr. McPHAIL. As I recall the testimony given in the House by those power companies, and they did appear, they indicated they could build lines only in their own areas.

INTEGRATED TRANSMISSION GRID SYSTEM

Senator CORDON. Do you know whether they have followed a policy in the combined service area of the group—Northern States, Otter Tail, and Interstate Power Co.—of designing a pattern of heavy transmission for integration purposes?

Mr. McPHAIL. They participated with the Rural Electrification projects and the Bureau and in preparing the proposed transmission grid for that area.

I would like to have you realize this grid provides a loop system where power would come in from both ends. Ultimately a tap in the center would probably be required to take care of the requirements. The power companies did participate in that layout.

Senator HAYDEN. Have you concluded all that you want to say about transmission lines?

Mr. McPHAIL. That covers the transmission lines, Mr. Chairman.

CENTRAL VALLEY PROJECT

CONTRA COSTA CANAL, CALIF.

Senator HAYDEN. While Senator Knowland is here, I would like to inquire about that Contra Costa proposal. What happened to it?

Mr. LINEWEAVER. The Contra Costa situation is this: The House on the floor adopted an amendment which prohibits the expenditure of any funds either to complete the investigations or to negotiate a contract with the city of Richmond and the Southwest Contra Costa district which would serve the city of Richmond area.

Senator HAYDEN. The city of Richmond was anxious to have something done, but there was opposition elsewhere; is that right?

Senator KNOWLAND. I understand we have set up for the ninth the California witnesses and there will be witnesses appearing for the Contra Costa district as well as the East Bay municipal utility district in opposition.

They both presented their case here before. The committee will have a chance to hear both sides of the issue on that situation.

Senator HAYDEN. In the meantime, I think it would be well to have Mr. Lineweaver put in the record factual information.

SURVEY OF CANAL EXTENSION

Mr. LINEWEAVER. I would like to submit a statement on what we would do with this $50,000 that was eliminated by the House on the floor, as well as a review of the action of the Senate Interior Committee in 1949, in which we were directed to act after being criticized very severely for not making surveys and investigations looking to the extension of industrial water service from the Contra Costa canal to the city of Richmond area.

So we are in the position of having been caught between two fires.

(The information referred to follows:)

CENTRAL VALLEY PROJECT, SOUTHWEST CONTRA COSTA WATER DISTRICT PROGRAM, FISCAL YEAR 1953

The fiscal year 1953 program for the Central Valley project, which was allowed by the Bureau of the Budget and submitted to the Congress, included an item of $50,000 for the southwest Contra Costa water district in fiscal year 1953. H. R. 7176, an act making appropriations for the Department of the Interior for the fiscal year ending June 30, 1953, as passed by the House, contained the proviso: "That no part of this appropriation shall be used to carry on field engineering, survey work, design, or initiate the construction of the southwest Contra Costa County water district system to deliver industrial water to the vicinity of Richmond, California."

An analysis of the $50,000 item programed for the southwest Contra Costa district indicates the following breakdown: (1) To complete field work including field engineering data, $30,000; (2) to prepare preliminary plans and designs necessary to determine the approximate final cost of the proposed facilities but not to the extent necessary to issue specifications, $19,500; and (3) for very preliminary discussions in connection with negotiation of the repayment contract and related activity, $500.

From this analysis it appears that none of the $50,000 shown on the schedule, except the $500 for preliminary repayment negotiations, could be used during fiscal year 1953 if the quoted proviso stands. Since the Senate Interior and Insular Affairs Committee instructed the Bureau, in 1949, to investigate the possibility of supplying the city of Richmond with municipal and industrial water from the Contra Costa canal, repeal of the prohibition on carrying out this instruction would permit the Bureau to comply with its instructions, complete the report, and close out this investigation.

STATEMENT ON WATER SUPPLY FOR CITY OF RICHMOND AREA, CENTRAL VALLEY PROJECT

The city of Richmond for a number of years has been seeking a supply of low-cost municipal and industrial water from various sources, including the Central Valley project. In and near Richmond, Calif., there are a number of large water-consuming industries. Such industries in which water becomes a significant part of their operating costs are interested in obtaining less expensive water supplies.

Domestic water supplies in the vicinity of San Francisco Bay historically have been both undependable and expensive. About 30 years ago, both the city of San Francisco and the cities of Oakland and Berkeley were served by private water companies using local surface and ground-water supplies. These supplies were inadequate for the growing population and both areas looked to the Sierras for additional water. In both areas special municipal arrangements were made and the private water companies were purchased.

In Oakland and Berkeley a quasi-municipal political subdivision was established called the East Bay municipal utility district (East Bay M. U. D. was organized in 1923). In 1924 the district began construction of Pardee Dam on the Mokelumne River and a steel pipe conduit to the local reservoirs. In 1929 it acquired East Bay Water Co. and began distribution of water.

Water rates and assessments in the district were reduced somewhat after the construction of the Mokelumne system, but still remain relatively high because of the great cost of retiring the bonded indebtedness. In recent years, the large population growth of this area and extension of the district boundaries have required large expenditures with the district increasing its aqueduct facilities and extending local distribution systems. Water rates to large industrial users have been relatively high and those to domestic consumers relatively low when compared to the average rate.

Until 1949 the Bureau of Reclamation had not given consideration to providing water service to the city of Richmond area. The Contra Costa Canal on the Central Valley project had been constructed with a capacity permitting the furnishing of 116,000 acre-feet of water annually to the agricultural, municipal, and industrial areas of Contra Costa County. Water service and repayment contract negotiations were under way for a number of years with the Contra Costa County water district which, had the contract negotiations been completed, would have provided for the furnishing of all of the 116,000 acre-feet

of water annually to the Contra Costa district. The form of contract under discussion with the Contra Costa district contained a schedule of water deliveries requiring the district to accept and pay for 116,000 acre-feet of water annually in the latter years of the proposed contract, and it was felt that the devolping water requirements for the Contra Costa district might require the full use of the capacity of the Contra Costa Canal before that date. The contract negotiations with the Contra Costa district were prolonged for several years because of the rapid development of urban and industrial areas in the district. In an election held in 1949, voters of the district rejected a proposed contract which would have provided for furnishing 116,000 acre-feet of water annually and the construction of an extensive irrigation distribution system. There was considerable local dissatisfaction with the cost and extent of the proposed irrigation distribution system and this was generally considered as the reason for the unfavorable local vote.

In an effort to meet this situation, the voters in the vicinity of the cities of Richmond, San Pablo, and El Carrito organized another political subdivision within the boundaries of the East Bay municipal utility district known as the southwest Contra Costa County water district. This district was formed and officers elected at a special election held on November 25, 1949.

In 1948 and 1949, former Senator Downey became keenly interested in the city of Richmond area water problems as they might be resolved through the furnishing of water from the Contra Costa Canal of the Central Valley project. Senator Downey in 1949 brought the matter to the attention of Senator O'Mahoney, chairman of the Senate Committee on Interior and Insular Affairs. In hearings on this subject, Senator Downey summarized as follows: "Richmond has been continuously endeavoring to negotiate. As a matter of fact, they are forming a district there under my promise I would directly intervene to help them try to get water. I made that statement to them 6 months ago."

Responsive to the inquiries of Senator O'Mahoney, by letter of June 8, 1949, the Secretary of the Interior reviewed in considerable detail the status of contract negotiations with the Contra Costa County water district and capacities of carriage facilities necessary therefor. That letter stated in part as follows:

"In the finding of feasibility of the Central Valley project, the capacity of the Contra Costa Canal was noted as 120 second-feet. This finding was submitted by the then Commissioner of Reclamation, Elwood Mead, who was the first State engineer of Wyoming, and was presented by Secretary of the Interior Harold Ickes to President Franklin D. Roosevelt, who approved it on December 2, 1935. The estimates of the required capacity of the canal were repeatedly reanalyzed among the Reclamation engineers in the project area; the engineers representing the State of California; the Chief Engineer of the Bureau of Reclamation, the late R. F. Walter, at Denver; and the Commissioner of Reclamation, John C. Page, also an engineer, in Washington. * * * Commissioner Page advised the House Appropriations Subcommittee on March 30, 1937, that a capacity of 275 second-feet 'is planned for the canal' * * *. At subsequent appropriations hearings in 1939 and 1940, Mr. Page advised the committee that the Contra Costa Canal would have a capacity of 350 second-feet."

As a result of the interest of Senators Downey and O'Mahoney, and following the unsuccessful election in June 1949 on the proposed water service and repayment contract with the Contra Costa County water district, the Bureau of Reclamation undertook discussions with the city of Richmond and the southwest Contra Costa County water district concerning the possibility of obtaining a water supply from the Contra Costa Canal of the Central Valley project. Senator O'Mahoney summarized the results of the 1949 hearing and the effect of the unfavorable vote on the proposed Contra Costa district contract as follows: "We now have an agreement here by the statements of the officials of the Bureau of Reclamation that negotiations will be undertaken immediately with the Contra Costa County water district and the city of Richmond to bring about the earliest possible contract for the disposition of the waters that are now available, on the basis of the suggestions which have been made here as the result of responses by the Senator from California and Messrs. Boke and Davison."

At the same time, the negotiation of a revised contract was initiated with the Contra Costa County water district, which eventually resulted in the execution by the district of a contract dated September 18, 1951. The revised contract provided for the construction of a much smaller irrigation distribution system and the furnishing of somewhat less water annually than had been provided for in the draft of contract rejected by the district voters in 1949. Instead of providing for eventual deliveries of 116,000 acre-feet of water as was contemplated

in the contract rejected in 1949, the water service contract executed in 1951 provided for maximum water deliveries to the Contra Costa district of 86,000 acre-feet annually. As a result of the agreement by the Contra Costa district on the revised quantities of water to be furnished, additional capacity is available in the Contra Costa canal for furnishing up to 30,000 acre-feet annually to other contracting agencies such as the southwest Contra Costa County water district.

Senator Knowland in 1951 raised the question of the authority and legal status of extending the Contra Costa canal to the city of Richmond. By letter of March 19, 1951, Senator Knowland was advised that the Bureau did not plan to extend the Contra Costa Canal. He was advised, however, that carrying facilities tapping the Contra Costa canal would be necessary. Senator Knowland was further advised that: "The Secretarial finding of feasibility for the Central Valley project, approved by the President on December 2, 1935, states that the 'Contra Costa conduit' will go through Contra Costa County 'to supply municipal, industrial, and agricultural water requirements.' In addition to the above, * * * the act of August 26, 1937 (50 Stat. 844, 850), which reauthorized the project under the Federal reclamation laws provides for construction not only of the principal works but for 'incidental works deemed necessary' to the entire project, one of the purposes of which was stated in that act to be the providing for the storage and delivery of water for reclamation and 'other beneficial uses.' Thus, that act provides the authority for the construction of the particular facilities that are required to furnish water for municipal, domestic, and industrial uses to the Richmond area."

Contract discussions were under way with the southwest district during fiscal year 1951. To complete the studies of the costs and water needs of this area, the Bureau of Reclamation requested funds in fiscal year 1952 for study and construction, in event of successful contract negotiations, of certain carriage facilities which would have utilized the Contra Costa canal for supplying water to the southwest Contra Costa County water district. The Congress eliminated the Bureau's request for funds in fiscal year 1952 and prohibited the expenditure of funds for studies, negotiation, or construction. Irrespective of this action, the southwest Contra Costa County water district on its own initiative and without approval by the Bureau of Reclamation and the Department of the Interior drafted a water-service contract for the purpose of securing water from the Central Valley project. In an election held on February 26, 1952, voters of the southwest district by an overwhelming majority authorized the officers of the district to execute the proposed contract. At the time this election was held the contract had not been approved by the California Districts Securities Commission which provides State review for certain types of local water districts.

Briefly summarizing, while initial Bureau contract negotiations involving water service from the Contra Costa canal did not contemplate furnishing water to the southwest Contra Costa County water district, the Bureau's plans were revised in 1949, responsive to the stated needs of the southwest district and resulting expressions of Senators Downey and O'Mahoney, and following the defeat of the proposed contract by the voters of the Contra Costa County water district to provide for furnishing water supply to the southwest district. Having thus revised plans, the Bureau now finds itself, by reason of more recent congressional instructions, unable to continue contract negotiations with this district.

There are attached copies of letters to Mr. Northcutt Ely, Washington representative of the East Bay municipal utility district and to Mr. Michael J. Kirwan, chairman of the Interior Subcommittee of the House Appropriations Committee. These letters state that the Bureau of Reclamation has had no contract negotiations in fiscal year 1952 with the southwest district, and that funds are being requested in fiscal year 1953 for this purpose.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D. C., February 20, 1952.

Mr. NORTHCUTT ELY,
Tower Building, Washington D. C.

MY DEAR MR. ELY: This confirms my letters of January 18 to Mr. McFarland, of the East Bay municipal utility district, and of January 22 to you, concerning the status of contract negotiations with the Southwest Contra Costa County water disrict. The Bureau of Reclamation has had no contract negotiations with this district during fiscal year 1952.

In response to your letter of February 19, I advise that, so far as the records of the Bureau of Reclamation show, the United States is not a party to any

contract with the Southwest Contra Costa County water district, and the Bureau of Reclamation has not negotiated any contract with the district. I am, therefore, unable to find any record of any obligation on the part of the Federal Government in connection with any construction of facilities in this district.

Sincerely yours,

G. W. LINEWEAVER,
Acting Commissioner.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D. C., February 5,1952.

Hon. MICHAEL J. KIRWAN,
House of Representatives, Washington, D. C.

MY DEAR MR. KIRWAN: During the recent hearings in connection with the justifications for appropriations for fiscal year 1953, Mr. C. W. Culp, clerk of the Interior Subcommittee of the House Appropriations Committee, requested information concerning the Bureau's program with regard to the distribution system for the Southwest Contra Costa County water district. Information submitted during the hearings indicated a request for $849,500 in fiscal year 1953 for the Contra Costa canal distribution systems. Of this amount, $799,500 is for continuation and virtual completion of the Contra Costa County water district distribution system. The remaining $50,000 requested is proposed for engineering and survey work on the Southwest Contra Costa County water district system, if this activity is approved by the committee.

As you know, action by the House and the Senate prohibited any activity on the Southwest Contra Costa County system during fiscal year 1952. If funds are allowed as requested for fiscal year 1953, it is estimated that a repayment contract can be secured early in the fiscal year and field work advanced to a point where a construction contract can be awarded early in fiscal year 1954. This proposal is based on the assumption that the various problems which have prevented allowance of funds for this work in fiscal year 1952 will have been resolved prior to fiscal year 1953.

If any further information is requested in connection with the Southwest Contra Costa County water district distribution system, please feel free to call on me.

Sincerely yours,

G. W. LINEWEAVER,
Acting Commissioner.

OPERATION AND MAINTENANCE

PALO VERDE WEIR, CALIFORNIA

Senator KNOWLAND. I understand you have discussed this Camp Stoneman situation. The only question I wanted to be sure the record was clear on is: How is Stoneman now being served?

Mr. MCPHAIL. I covered that in my testimony. It is now being served by the Pacific Gas & Electric Co. through a wheeling contract we have with that company.

Senator HAYDEN. I have another matter in connection with the maintenance of the Palo Verde weir. What is the situation there. We had some provision before about it. What is the authority with respect to it.

LANGUAGE RESTRICTION

Mr. LINEWEAVER. We are concerned about the language in First Deficiency Act of 1944, which provided briefly as follows:

No part of said sum or other funds of the United States shall be expended for the construction, operation or maintenance of said weir after 6 months from the date of the termination of the present war, as determined by proclamation of the President or concurrent resolution of the Congress.

DESCRIPTION OF PALO VERDE WEIR

Mr. LINEWEAVER. Under the language or the appropriation in the First Deficiency Act of 1944, we constructed that weir.

Senator HAYDEN. So that the people could be supplied with water.

Senator CORDON. Where is it?

Senator HAYDEN. The Palo Verde Valley is in California opposite the Colorado River Indian Reservation.

When the clear water came out of Boulder Dam, it scoured out the bed of the stream so irrigation water could not be diverted into the canals. Here we were in the middle of a war with a rich agricultural area in California threatened by inability to get water for irrigation.

Senator KNOWLAND. It is one of the oldest districts.

Senator HAYDEN. They could not produce their crops. There was no immediate relief except to put the weir in.

Senator CORDON. Why would the fact that the water was clear keep them from producing crops?

Senator HAYDEN. Because it scoured the silt out of the channel. When it came clear out of Boulder Dam, it proceeded to pick up more silt as it went down. It scoured the bed from one dam to another.

There are two dams above taking the silt. Absolutely clear water came into the river just above the project and scoured it out there for a good many miles. It left the Palo Verde Canal heading high and dry. In order that they might grow crops, Congress gave this appropriation during the war to build this weir.

What are you concerned about?

MAINTENANCE PROBLEM

Mr. LINEWEAVER. What we will do when the war is declared over in the light of that language which our lawyers hold would prohibit from spending any money for the maintenance of that weir, pending an attempt at a legislative solution of the problem.

Senator CORDON. Why do you need a legislative solution? You put it in and did not provide for reimbursement?

Mr. LINEWEAVER. Yes, sir. It goes further than that. For several years the Arizona people, or the Colorado River Indian people, and the Palo Verde people have been trying to work out a solution of the problem by which we could get rid of the temporary weir and get the water for the Palo Verde district handled by a permanent solution. That is, by pumping, or a conduit across from the Arizona side.

Senator KNOWLAND. The Palo Verde people do not think that the pumping solution is the right solution and it would greatly increase costs. They feel being one of the large irrigation districts on the Colorado, that would be an unfair situation because this has grown out of the construction work that has taken place on the river.

Senator HAYDEN. They are not responsible at all for the scouring. That is the result of action taken by the Government. On the other hand, on the Indian reservation it is just the opposite. As far as Palo Verde is concerned, it is advantageous to have the channel lowered because it drains the land that much better. There is a positive advantage to the particular area above it on the Arizona side that is in the Indian reservation if the channel is permitted to scour.

I have also had a great deal of sympathy for those people. Either they must be supplied by some kind of pumping plant with the Government to furnish them power for it, or it could be carried by taking the water out of the Arizona side and siphoning it under the river. That is the program that has been going along.

The question is: When is the war over? It does not arise this year.

Senator KNOWLAND. But it is something that may come up.

REMEDIAL LEGISLATION PENDING

Mr. LINEWEAVER. There is pending in the House H. R. 6591 and in the Senate S. 3055, introduced by Senator Knowland, which proposes a solution along the line that you mentioned, Senator Hayden.

Senator Knowland's bill will be presented in the record.

(The material referred to follows:)

[S. 3055, 82d Cong., 2d sess.]

A BILL Authorizing construction of works to restore to Palto Verde irrigation district, California, a means of gravity diversion of its irrigation water supply from the Colorado River and providing certain benefits to the Colorado River Indian Reservation, Arizona, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purposes of—

(a) providing for the restitution to Palo Verde irrigation district, a public agency of the State of California of a means of gravity diversion from the Colorado River of its irrigation-water supply, which water supply was appropriated by the predecessors in interest of the district in the year 1877 and subsequent thereto and was agreed by the United States to be delivered to the district, from storage available in the Boulder Canyon Reservoir (Lake Mead), by contract dated February 7, 1933, executed between the United States and the district under the authority of section 5 of the Boulder Canyon Project Act (45 Stat. 1057) and which water supply was, prior to the construction across the Colorado River, above the district, of Hoover Dam, Davis Dam, Parker Dam, and Headgate Rock Dam, diverted by the district from the river by gravity, but after construction of said dams could not be diverted by gravity, by reason of the degradation of the bed of the river, resulting from the retention of silt behind said dams, until the United States restored the former water level of the river, for the time being, by the construction of a temporary rock weir across said river near the Blythe intake of the district, as provided for in the First Deficiency Appropriation Act of 1944 (58 Stat. 157);

(b) providing for the removal of said weir, or section or sections thereof, or, in the discretion of the Secretary of the Interior, causing the Colorado River to pass around said weir, in order to permit said river further to degrade its bed and thereby improve the underground drainage of lands in the Colorado River Indian Reservation in Arizona, reduce the hazard of floods upon said reservation, and enhance the power drop at the power plant at said Headgate Rock Dam, proposed to be constructed by the Bureau of Indian Affairs; the Secretary of the Interior is hereby authorized to construct, operate, and maintain an enlargement and extension of the main canal now being constructed in the Colorado River Indian Reservation, and a conduit over or under the Colorado River, and incidental works and structures, all adequate to deliver into the main canal of Palo Verde irrigation district at or near the Blythe intake of the district on the Colorado River one thousand eight hundred and twenty cubic feet per second of water, to be diverted from the Colorado River at Headgate Rock Dam. The Secretary of the Interior is also authorized, upon completion of said canal, conduit, and incidental works and structures to remove said weir, or section or sections thereof, or in his discretion to cause the Colorado River to pass around said weir. The capital cost of all such works shall be nonreimbursable; and

(c) the United States having assumed the control, management, improvement, and protection of the Colorado River in Arizona, California, and

Nevada, the United States shall, notwithstanding the first proviso clause in the Act of June 28, 1946 (60 Stat. 338), be obligated and liable for damages incurred in consequence of its said operations.

SEC. 2. After construction of such canal, conduit, and incidental works and structures is completed and such works are in operation Palo Verde irrigation district shall pay to the Secretary of the Interior, on or before the 1st day of May of each year a sum equal to 70 per centum of the reasonable and necessary costs of operation and maintenance of such works for the next ensuing fiscal year, as fixed by the Secretary of the Interior after consultation with the district, in written notice delivered by him to said district not later than the 1st day of July of the previous calendar year, and said Secretary shall, acting through such agents as he may designate, operate and maintain Headgate Rock Dam and such works for the joint benefit of the Colorado River Indian Reservation and the district and so as to deliver for use under and in accordance with said contract dated February 7, 1933, a flow of water in amounts as ordered by the district, in accordance with weekly schedules filed with the Secretary, or his designated agent, not exceeding one thousand eight hundred and twenty cubic feet per second of water into the district's main canal at or near said Blythe intake. Said costs of operation and maintenance shall not include overhead expense incurred elsewhere than on the reservation.

SEC. 3. If any charges to be paid by the district for operation and maintenance are not paid when due, an interest charge of one-half of 1 per centum of the principal amount unpaid shall be added thereto as liquidated damages and thereafter as further liquidated damages an additional interest charge of one-half of 1 per centum of the principal amount unpaid shall be added on the first day of each succeeding calendar month until the amount due, including interest, is paid in full. The United States reserves the right to refuse to deliver water to the district in the event of default for a period of twelve months in any payment due or to become due under this Act.

SEC. 4. The Secretary shall give the district the privilege of consultation as to all matters of importance relating to the construction, operation, and maintenance of said works and structures.

SEC. 5. Disputes or disagreements as to the interpretation or performance of the provisions of this Act shall be determined either by arbitration or court proceedings, the Secretary of the Interior being authorized to represent the United States in such proceedings. Whenever a dispute or disagreement arises out of this Act, and the parties agree to submit the matter to arbitration, the district shall name one arbitrator, and the Secretary shall name one arbitrator, and the two arbitrators thus chosen shall select three other arbitrators, but in the event of their failure to name all or any of the three arbitrators within thirty days after their first meeting, such arbitrators not so selected shall be named by the senior judge of the United States Court of Appeals for the Ninth Circuit. The decision of any three of such arbitrators shall be a binding and valid award of the arbitrators.

SEC. 6. Said contract dated February 7, 1933, shall, upon the filing with the Secretary of the Interior by the board of trustees of said district of a certified copy of its resolution consenting thereto, be deemed modified so as to require delivery of the water therein specified, through said canal and conduit, into said district's main canal at or near its Blythe intake, instead of delivery in the Colorado River immediately above Blythe intake. Except as expressly provided in this section nothing in this Act contained shall be deemed to modify, nor affect said contract, nor to increase, decrease, or otherwise affect the rights or obligations of the district under said contract.

SEC. 7. The officials or designated representatives of the district shall have full and free access to the books and records of the United States, so far as they relate to the matters covered by this Act, with the right at any time during office hours to make copies of and from the same; and the Secretary shall have the same right in respect of the books and records of the district.

SEC. 8. The use of all water diverted for the district through said works from the Colorado River shall be subject to and controlled by the Colorado River Compact, the Boulder Canyon Project Act (45 Stat. 1057), the California Limitation Act (Stats. Cal. 1929, ch. 16), said contract dated February 7, 1933, and the Mexican Water Treaty (Treaty Series 994), and shall be included within and shall in no way increase the total use of water to which the State of California is entitled as limited by said compact, statutes, and treaty.

SEC. 9. There are hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated, such sums as may be necessary to carry out the provisions of this Act.

Mr. LINEWEAVER. The hearing on the House bill will not be held until the middle of June. There is no chance for consideration this year in the opinion of Congressman Phillips who is responsible for the bill in the House, and I assume Senator Knowland is in the same position here.

I merely call that to the attention of the committee because we do not want to be caught in the middle during the fiscal year and have a question raised that we cannot maintain this weir pending this legislation.

(The following statement was supplied.)

The President by Proclamation No. 2974, as of April 28, 1952, terminates the national emergency proclaimed on September 8, 1939, and May 27, 1941.

Mr. LINEWEAVER. I assume by some view with respect to this problem in the committee report that we could take care of the situation. In view of the Palo Verde weir problem which has been before this committee, I felt we should bring that to your attention.

CONSTRUCTION COST INDEXES

Mr. MARKWELL. It has been customary for us to insert in the record in the part which pertains to construction and rehabilitation a tabulation showing the latest construction cost indexes. Would it be appropriate to insert that?

Senator HAYDEN. Yes.

(The material referred to follows:)

Design and Construction Division, Denver, Colo.—Cost indexes for construction work

[January 1940=1.00]

	April 1951	October 1951	January 1952	April 1952
Dams:				
Earth	2.10	2.10	2.10	2.15
Concrete	2.25	2.25	2.25	2.30
Pumping plants:				
Building and equipment	2.25	2.35	2.40	2.40
Structures and improvements [1]	2.45	2.35	2.55	2.60
Equipment	2.05	2.15	2.20	2.20
Pumps and prime movers	2.05	2.10	2.20	2.20
Accessory electric and miscellaneous equipment	2.05	2.20	2.20	2.20
Discharge pipes	2.45	2.50	2.55	2.55
Canals and conduits:				
Canals	2.20	2.35	2.40	2.45
Conduits (tunnels, free flow, concrete lined)	2.40	2.45	2.45	2.50
Laterals and drains	2.45	2.55	2.65	2.65
Power plants, hydro:				
Building and equipment	2.20	2.25	2.30	2.30
Structures and improvements [1]	2.40	2.50	2.55	2.60
Equipment	2.10	2.10	2.20	2.20
Turbines and generators	2.10	2.10	2.20	2.25
Accessory electrical equipment	2.10	2.10	2.20	2.20
Miscellaneous equipment	2.15	2.20	2.20	2.20
Penstocks	2.45	2.50	2.55	2.55
Transmission switchyards and substations	2.20	2.20	2.20	2.20
Transmission lines (wood pole)	2.10	2.20	2.25	2.25
Transmission lines (steel tower)	2.15	2.15	2.15	2.15
Permanent general property buildings	2.60	2.60	2.60	2.60
Roads and bridges:				
Primary roads	2.15	2.25	2.30	2.35
Secondary roads, unsurfaced	2.00	2.15	2.25	2.25
Bridges	2.40	2.45	2.45	2.45
Composite index	2.25	2.25	2.30	2.35

[1] Indexes for Structures and Improvements on Pumping Plants and Powerplants are based on a reinforced concrete structure.

NOTE.—The above cost indexes for construction work are based on the combined costs of material and labor furnished by the contractor and material and labor furnished by the Government.

All-American Canal Project

Coachella Division, Calif.

Senator Knowland. Since we are talking about some projects here, do you think this might be a good point to bring us up to date on the Coachella situation?

Mr. Lineweaver. We have a statement which was inserted in the House hearings with respect to the language that was in the 1952 appropriation bill making an appropriation of $2,783,000 with the provision that it should be reimbursable, unless the Coachella district should be judicially determined not to be liable therefor. We construed that to mean litigation would have to be instituted and we laid the matter before the Department of Justice in December. On April 10 the Department of Justice advised the Department of the Interior that the matter had been forwarded to the United States Attorney at Los Angeles for appropriate action. Subsequently we have been advised that an action was instituted in the Federal court at Los Angeles on April 25.

Senator Knowland. So they now have that in the mill, of having the legal action carrying out the general understanding we have?

Mr. Lineweaver. That takes care of that phase of it. In order that the record should show what has been done, including the determination of the General Accounting Office as to the authority of the Secretary to proceed, I will insert a complete statement for the record.

(The statement referred to follows:)

Statement Relating to the Matter of Completing Construction of the Distribution System for the Coachella Division, All-American Canal System, Boulder Canyon Project

The Coachella Valley County water district in 1947 sought the construction by the Bureau of Reclamation of an irrigation distribution system. It was then estimated that the cost of the system, together with certain other related work and investigation all herein referred to as the "distribution system," would be $13,500,000, exclusive of the cost of certain protective works to be accomplished under a nonreimbursable allocation to flood control of $4,500,000. State law governing such a district requires, by analogy to a bond election, a similar vote of the district electorate upon the maximum district obligation to be undertaken in each repayment contract made pursuant to the reclamation law. Accordingly, in the instant case, there was voted the district repayment contract of December 22, 1947, whereby the district undertook to repay to the United States the actual cost of the distribution system, exclusive of the protective works, within the voted maximum sum of $13,500,000.[1]

Because of rising costs it soon became apparent that more than $13,500,000 would be needed in order to complete the distribution system. The Bureau of Reclamation thereupon sought to obtain from the district a supplemental repayment contract increasing the $13,500,000 maximum repayment obligation of the district. The district, however, refused to submit to its electorate the assumption of any additional repayment obligation in connection with the distribution system. It contended that under the 1947 contract the United States was obligated to construct the full distribution system as envisioned at the time the 1947 contract was entered into regardless of whether the cost to the United States in completing the system would exceed $13,500,000, provided, of course, that Congress made the necessary appropriations. On the other hand, the Bureau of Reclamation has taken the firm position that the 1947 contract does not, nor under the law could it, so bind the United States.

[1] For a summary of principal, pertinent provisions of the 1947 repayment contract see hearings before a subcommittee of the Senate Committee on Appropriations, on the Interior Department Appropriations for 1951 (81st Cong., 2d sess.), p. 789.

This issue having been brought to its attention, in January of 1950 the House Committee on Appropriations, Eighty-first Congress, second session, placed it before a special investigative staff for analysis. That staff's conclusion as to this issue did not support the views of the Bureau of Reclamation regarding the effect of the contract.[2] On the other hand the House Appropriations Committee considering estimates for 1951 (H. Rept. No. 1797, 81st Cong., 2d sess., p. 172) made the observation, in part, as follows:

"* * * no appropriation has been included in the bill for further work on this system. The question is moot as to whether or not the latest contract between the Department and the Coachella Valley County water district requires the Secretary to provide facilities costing in excess of the sum agreed by the district to be repaid. However, there is no lack of ambiguity as to whether Congress is obligated to make additional appropriations * * *."

This view seems to have been confirmed by the Congress in enacting the final appropriations for 1951, as it did not include funds for the further construction of the distribution system. Moreover, in the first appropriation thereafter made for work on the system in excess of $13,500,000, as contained in the 1952 Interior Department Appropriations Act (Public Law 136, 82d Cong.), rather than making the overrun nonreimbursable, the appropriation act provision[3] required in substance and effect that it be repaid by the district, unless as a result of the judicial determination of a certain issue the district should be rendered not liable therefor.

The Department of the Interior, by letter dated November 6, 1951, requested the advice of the Comptroller General of the United States as to whether the Secretary was authorized under the appropriation provision to proceed with expenditure of appropriated funds for completion of the distribution system without first securing from the district a supplemental contract conditionally increasing the district's repayment obligation in an amount sufficient to repay the United States for the costs of such completion.

In a decision dated December 7, 1951 (B–106038), a copy of which is appended as attachment A, the Comptroller General advised the Secretary of the Interior that in enacting the appropriation provision previously quoted Congress intended that the distribution system should be completed at the earliest possible date and that expenditures from the appropriation are authorized to be made without first securing a supplemental contract.

The reclamation law requires the Secretary of the Interior, and by delegation the Bureau of Reclamation, to take all steps necessary to establish contractual arrangements for the repayment to the United States of expenditures of reimbursable funds made in carrying out its provisions. Accordingly, following enactment of the appropriation provision for approximately 2½ months prior to the receipt of the Comptroller General's decision, the Bureau of Reclamation had been seeking to negotiate with the board of directors of the district on the subject of a supplemental repayment contract. By resolution dated October 9, 1951, the board indicated that it, too, recognized the necessity for a conditional repayment contract in order to establish the necessary legal relationship against which the judicial determination contemplated in the appropriation provision could effectively operate. The Bureau proposed to the district board a contract whereunder the district would assume an additional repayment obligation, subject, however, to the provision that if it should be determined by a court of competent jurisdiction that the United States was not obligated to complete the distribution system, regardless of cost in excess of the existing district repayment obligation under the 1947 contract, the district should be relieved of the conditional supplemental obligation. It also included two other important provisions, one stipulating that the execution of the supplemental contract be author-

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[2] See the investigative staff's report, Congressional Record, vol. 96, pp. 4262–4268, or hearings before a subcommittee of the Senate Appropriations Committee on the Interior Department Appropriations for 1951 (81st Cong., 2d sess.), p. 773. And at pp. 788 to 790 of the hearings last cited appears a statement of the views of the Bureau of Reclamation regarding the 1947 repayment contract.

[3] This provision under the heading "Bureau of Reclamation" and captioned "Administrative provisions," is as follows:

"Not to exceed $2,783,000 of the appropriation herein made for 'Construction and rehabilitation, Bureau of Reclamation' shall be expended for completion of construction of the Coachella division of the All-American Canal system, Boulder Canyon project: *Provided*, That any sums thereof so expended in excess of the amount required to be repaid under the existing contract between the Coachella Valley County water district and the United States shall be repayable by said district to the United States unless said district shall be judicially determined by a court of competent jurisdiction to be not liable therefor."

ized by the district electorate as required by California law and the other requiring the contract to be judicially confirmed as contemplated by both State law and Federal reclamation law.

The district board rejected the Bureau's contract and submitted its own counterproposal which proved unacceptable to the Bureau, primarily because it omitted both provisions last mentioned without which, in the Bureau's view, any such agreement could not be considered valid and enforceable. The district board's insistence on these omissions appears, as indicated by district officials, to be based on the belief that there is grave doubt that there could be attained approval by the district electorate of a supplemental repayment contract of any kind.

The Secretary of the Interior by memorandum dated November 21, 1951, instructed the Commissioner of Reclamation to proceed with expenditure of the appropriated funds, should the requested Comptroller General's opinion hold them available without prior additional agreements with the district, toward completing the distribution system. That memorandum also instructed the Commissioner that steps should be taken promptly toward bringing about the judicial determination anticipated in the language of the appropriation provision. Finally it included an instruction, compatible with requirements of the reclamation law, that unless the court should hold that the United States is obligated under the 1947 contract to complete the distribution system, regardless of cost, thereby in effect making part or all of the cost of the remaining distribution system works nonreimbursable, those works which were constructed at a cost greater than existing repayment contract coverage, were not to be made available for the delivery of water until a satisfactory supplemental repayment contract with the district for all reimbursable costs had been validated.

The Bureau's letter of December 12, 1951, to the district enclosed a copy of the Comptroller General's decision of December 7, and informed the district of the substance of the departmental instruction, already mentioned, and that the Bureau would proceed accordingly within the limit of available funds. It explained, furthermore, the need for a continuation of negotiations, with the Bureau's full cooperation, for a supplemental repayment contract to establish the district repayment obligation, contingent upon the pertinent court determination. This was in recognition of the possible eventuality of a future judicial determination adverse to the district's position and the manifest difficulty which, after the full overrun expenditure had been made and the distribution system had been completed, would be attendant upon efforts to obtain a supplemental repayment contract, conditional or otherwise, dependent as it is for its validity as a district obligation, upon a vote of the district electorate. The Bureau's letter of January 9, 1952, invited the district's attention once more to the departmental instruction regarding the nonavailability of works, in relation to a supplemental repayment contract.

By its letter of December 26, 1951, addressed to the Bureau's regional director, the district emphasized its view, in substance and effect, that the action of the Congress in enacting the appropriation provision and the subsequent Comptroller General's decision had the effect of dispensing with all requirement for a supplemental repayment contract of any kind prior to completion of the distribution system.

In connection with the prospective judicial determination previously referred to, the Solicitor of the Department of the Interior on December 29, 1951, formally requested the Attorney General of the United States to take such steps as he might deem appropriate, and as promptly as practicable, toward attainment of the evident objective of the Congress in the matter of procuring this judicial determination. Subsequently, during the hearings before the subcommittee of the House Appropriations Committee on the Interior Department appropriations for the fiscal year 1953, a member of the subcommittee inquired as to when it might be expected that court action would be initiated in connection with this judicial determination.[4] On February 21, 1952, the Solicitor of the Department of the Interior wrote to the Attorney General and, referring to the inquiry made by the member of the House subcommittee, requested information as to the progress that had been made in the study of the problem of litigation and an estimate as to when a conclusion might probably be reached on the matter of instituting the court action. The Bureau of Reclamation was informed that the Department of Justice had this matter under active consideration. By its letter of April 10, 1952, the Department of Justice advised that the matter was being forwarded to the United States attorney at Los Angeles, Calif., for appropriate

[4] See p. 350 of the printed record of the House hearings.

action. Subsequently the Bureau was advised that the Department of Justice had on April 25, 1952, instituted a judicial proceeding in the matter in the United States District Court, Southern District of California.

Early in the Bureau's negotiations with the district following enactment of the appropriation provision the district board had been apprised of the further complicating fact that, principally because of rising costs, the original estimate of the amount needed for completing the distribution works had been revised upward by a substantial amount so that additional funds over and above the $2,783,000 provided by the 1952 Interior Department Appropriation Act would be required. Accordingly, the Bureau's letter of December 12, 1951, advised the district that this would be brought to the attention of Congress when the appropriations for the fiscal year 1953 are under consideration. That letter was acknowledged by the district's letter of December 21, 1951, which expressed the district's view that the decision of the Comptroller General had cleared the way for completing the project, provided that Congress would appropriate whatever additional money is needed, a request for which the district advised, it presumed the Bureau would include in the 1953 budget requests. To this the Bureau by letter of January 9, 1952, responded by advising the district that, among other things, because of the time element in relation to the submission of estimates for inclusion in the 1953 budget requests, it would not be feasible to comply with the district's request for inclusion therein of a request for additional funds for the distribution system. The same letter confirmed earlier advice that the Bureau would make to the appropriate committee of Congress considering the 1953 appropriations, a full disclosure of the current situation, including the fact that the current estimates are in excess of the amount appropriated for 1952 for completion of the distribution system.

[Attachment A]

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, December 7, 1951.

The honorable the SECRETARY OF THE INTERIOR.

MY DEAR MR. SECRETARY: Reference is made to a letter dated November 6, 1951, from the Assistant Secretary of the Interior, requesting a decision as to whether, under the circumstances recited therein, you are authorized to proceed with expenditure of appropriated funds to complete the Coachella distribution system, as described in contract No. I1r-781, supplemental, dated December 22, 1947, between the United States and the Coachella Valley County water district, without first securing a supplemental contract thereto which would increase the existing repayment obligation of the district in an amount sufficient to repay the United States for the costs of such completion.

The above-described contract provides for the construction by the Bureau of Reclamation of the subject irrigation distribution system and for repayment by the district to the United States of the actual costs, not exceeding $13,500,000, of the work to be performed by the United States. It is stated that, because of increases in the prices of materials and labor, the actual costs to the Government of completing this contract will exceed the repayment obligation of the district thereunder and it is the view of the Bureau of Reclamation that (1) under the subject contract the United States is not, nor, under powers vested in you by the applicable provisions of law, could it be so obligated to perform the additional work necessary to complete the distribution system without assurances of repayment; and (2) that unless Congress specifically provided otherwise, the Bureau would have to insist on a repayment contract covering expenditures beyond the amount of the existing repayment obligation of the district.

The Interior Department Appropriation Act for 1952, Public Law 136, Eighty-second Congress, includes the following provision:

"Not to exceed $2,783,000 of the appropriation herein made for 'Construction and rehabilitation, Bureau of Reclamation' shall be expended for completion of construction of the Coachella division of the All-American Canal system, Boulder Canyon project: *Provided*, That any sums thereof so expended in excess of the amount required to be repaid under the existing contract between the Coachella Valley County water district and the United States shall be repayable by said district to the United States unless said district shall be judicially determined by a court of competent jurisdiction to be not liable therefor."

The legislative history of this act discloses that the above-quoted provision was adopted only after complete and thorough consideration. In the hearings thereon before the subcommittee of the Committee on Appropriations, House of Representatives, pages 437 and 438, it was stated that no funds were being requested by the Bureau of Reclamation for the completion of the Coachella division of the All-American Canal system. In explanation thereof, Mr. Nelson of your Department stated as follows:

"On the Coachella, in the matter of the repayment contract they had a limitation of their obligation of $13.5 million. Last year the Congress appropriated up to the amount of the $13.5 million, and what we are going to do beyond that is a matter of further negotiation. We have felt that we could not go further than the $13.5 million without a supplemental contract or some agreement with respect to the repayment beyond that.

* * * * * * *

"We felt the contract limited us, Mr. Norrell, to ask for only $13.5 million. The district takes a different view, and I believe the investigators for the committee last year submitted a report that took a different view from ours."

In the hearings before the subcommittee of the Committee on Appropriations, United States Senate, pages 1335–1361, the discussion on the request by the representatives of the Coachella Valley water district that funds be appropriated for the completion of the work contracted for included reference to the validity of the contract. In that connection, it was concluded that the question was one of law to be decided by the courts. The managers on the part of the House conferees, appearing in the conference report of July 30, 1951, on the Interior Department appropriation bill, 1952, recommended as follows:

"Amendments Nos. 78, 79, 80, 81, 82, and 83—Coachella distribution system: Authorize expenditures of not to exceed $2,783,000 as proposed by the Senate, instead of not to exceed $1,684,000 as proposed by the House, for completion of construction of the Coachella division of the All-American Canal system; make the expenditure of such funds mandatory as proposed by the Senate, instead of permissive as proposed by the House; and instead of requiring a definite repayment arrangement in advance of expenditure as proposed by the House, adopt the proposal of the Senate that such expenditure shall be repayable unless it shall be judicially determined by a court of competent jurisdiction that the irrigation district is not liable therefor."

In view of the entire legislative history of the subject provision and its unambiguous language, it is apparent that Congress intended that the Coachella distribution system be completed at the earliest possible date and that the question as to the validity of the existing contract and the obligations created thereunder be left for subsequent determination by a court of competent jurisdiction.

Accordingly, I have to advise that there is ample authority for you to proceed with expenditure of the appropriated funds designated for use in completion of the Coachella division of the All-American Canal system, as described in contract No. IIr–781, supplemental, dated December 22, 1947, without first securing a supplemental repayment contract.

Sincerely yours,

LINDSAY C. WARREN,
Comptroller General of the United States.

COST OF COMPLETING COACHELLA SYSTEM

Mr. LINEWEAVER. The next problem we have, which we presented to the House, related to estimates which shows an increase in the cost of completing the Coachella system over what we had submitted to the Congress last year on which that appropriation of $2,783,000 was based.

The situation is something that has come about through certain changes in plans and other matters which are explained in detail in this statement, which I will submit for the record. The additional amount required to complete this system is estimated at $1,419,000 if we are not able to reach some agreement with respect to a $97,000 item for the replacement of conduits under the Southern Pacific railroad crossings.

MECCA-BLYTHE HIGHWAY BRIDGE

Another item which has entered into the matter is a $260,000 highway bridge over the Mecca-Blythe Highway which we had hoped and the State Highway Commission of California had hoped would not have to be built because the State highway commission had felt this highway could be abandoned.

Certain residents of the area have insisted the highway be continued. Therefore, under our agreement of 1946–47 with the California State Highway Commission, it is now felt that this bridge must be built and an estimate is included for this purpose.

CONSTRUCTION ESTIMATES, COACHELLA DIVISION

Those are some of the items that have contributed to this increased cost of $1,419,000, or a minimum of $1,332,000, if we can reach an agreement to repair, rather than replace these conduits under the railroad crossings.

Senator CORDON. Is your figure of $2,783,000 intended to be a figure for completion?

Mr. LINEWEAVER. That was the estimate last year.

Senator CORDON. Now, it costs $1,419,000, or $1,332,000, depending on the circumstances?

Mr. LINEWEAVER. Depending upon whether we can reach an agreement with the district that the repair of the conduits will be adequate.

Senator HAYDEN. Have you come to a final agreement with the district with respect to a repayment contract?

Mr. LINEWEAVER. No, sir; that is a matter of litigation.

I have another statement to be inserted in the record with regard to construction estimates for the Coachella distribution system.

Senator HAYDEN. That may be inserted into the record at this point.

(The statement referred to follows:)

STATEMENT ON INCREASE IN CONSTRUCTION ESTIMATES FOR THE COACHELLA DISTRIBUTION SYSTEM

The current total estimated cost of the Coachella distribution system, as of March 31, 1952, is $17,675,266. This estimate is $1,504,266 above the total estimate of $16,171,000 for the distribution system as reported to this committee during the appropriation hearings last year and is $263,000 above the total estimate of $17,412,266 furnished the House Appropriations Committee in testimony on the fiscal year 1953 appropriation bill. The reimbursability of any expenditures in excess of the $13,500,000 limitation of the existing repayment contract will be determined by the court in accordance with the language in the 1952 appropriation act.

The estimate of additional funds which will be required to complete construction over and above the $2,783,000 provided in the appropriation is $1,419,000. However, if arrangements can be made for the satisfactory repair rather than the replacement of certain conduits of the existing distribution system the additional funds required may be reduced from $1,419,0000 to $1,332,000. The increase in the estimate is principally accounted for by—

Increases in the estimates for unit 8 and part 2 of unit 9 which remain to be completed.

The addition of a new item of $260,000 for construction of a highway bridge to carry the Mecca-Blythe Highway over the flood protection dike above the Coachella main canal.

An additional amount of $97,000 for replacement of conduits of the existing distribution system which cross the main line of the Southern Pacific Railroad. If satisfactory repairs can be made this amount may be reduced to around $10,000.

These estimates are partially offset by savings which have been realized on construction, so that the net increase in the current estimate (including the item of $97,000 for replacement of conduits) over the increase of $1,340,000 recently reported to the House Appropriations Committee is only $79,000. In the event repair of the existing conduits can be satisfactorily accomplished instead of replacement of the pipe, all the remaining work, including construction of the bridge, can be carried out with an additional allotment of $1,332,000 which is within the amount of the increased estimate reported to the House.

Factors primarily responsible for the increase in the estimates for unit 8 and part 2 of unit 9 are higher construction prices which have risen at least 10 percent above the level of January 1952 and superior construction standards for purposes of reducing maintenance costs and facilitating operation of the system generally.

The new item of $260,000 for construction of the highway bridge at this time is due to the attitude of the California State Highway Department which had hoped to abandon the highway. In view of this attitude and until it was definitely determined that the bridge would be required, this amount was not included in the estimate. However, since local public interest has been expressed in favor of maintaining the highway, and since this is a bonded road which cannot be closed by the State without the approval of the voters and action of the legislature, the Bureau now believes that the Government can no longer delay its obligation under the existing contract with the State to build the bridge.

The additional amount of $97,000 for replacement of distribution conduits under the Southern Pacific Railroad is required to correct conditions which have developed since the original construction was completed and which conditions are objectionable to the district and the railroad company. It is possible that repairs to joints in the existing installations could be made for $10,000. However, in the event it should be necessary to replace the pipe $97,000 would be required.

A comparison of the increases in the estimates for the remaining construction on the Coachella division as recently reported to the House Appropriations Committee and as revised March 31, 1952, to include the additional items mentioned is given in the following tabulation. So that this committee may view the revised estimate and program in the light of the maximum requirements, the data and subsequent explanation are predicated on the amount of $97,000 for replacement of the conduits in question.

As presented to House Appropriations Committee (p. 845, pt. 3, appropriation hearings 1953):

	Total estimate fiscal year 1952 budget	Total estimate fiscal year 1953 budget	Increase in estimate
Unit 8	$978,000	$1,893,000	$915,000
Part 2, unit 9	1,772,000	2,197,000	425,000
Total	2,750,000	4,090,000	1,340,000

As revised March 31, 1952:

	Total estimate fiscal year 1952 budget	Total estimate fiscal year 1953 budget	Increase in estimate
Unit 8	$978,000	$1,893,000	$915,000
Pt. 2, unit 9	1,772,000	2,103,000	331,000
Mecca-Blythe Highway Bridge		260,000	260,000
Replacement of irrigation conduits under railroad		* 97,000	* 97,000
Savings on construction			−184,000
Total	2,750,000	4,353,000	1,419,000
*If repair of the conduits can be accomplished instead of replacement the totals would be reduced by		−87,000	−87,000
Total	2,750,000	4,266,000	1,332,000

On the basis of the information furnished in the fiscal year 1952 budget, this committee recommended and Congress appropriated $2,783,000 to complete the system. Consequently funds are currently available for completion of the dis-

tribution system as presently contemplated with the exception of unit 8, the highway bridge, and the additional work on the conduits under the railroad. Funds also have been reserved for completion of the drainage investigations and farm-unit development as shown in the current program.

Of the funds available from the $2,783,000 appropriation $749,505 has been scheduled for construction of a part of the system on unit 8. This amount will be used to provide serviceable facilities for the irrigation of 2,000 acres of the 4,600 acres in this unit. The facilities which would be provided include the main irrigation lateral of the unit (less pumping equipment for future sublaterals) and an equalizing reservoir for operation of the system. It is planned for the installation to be of underground construction. Design work is now in progress with construction scheduled for early next fall. If construction is confined to this plan the work should be completed in October 1953.

Since the estimates for construction of the highway and replacement of the irrigation conduits under the railroad have not been included in any previous estimate presented to the Congress, this work has not been scheduled with available funds. In view of the fact that these items were not considered by this committee when it provided the $2,783,000 to complete construction of the distribution system last year, if the work is to be carried out with the funds now available, further instructions are required.

In event construction of the highway bridge and replacement of the irrigation conduits are carried out with available funds, and assuming that $97,000 will be required for replacement of the conduits under the railroad, the amount for construction of unit 8 would be reduced to $392,505. This amount would permit the Bureau to extend the lateral system into unit 8 but it would not provide a serviceable utility. However, it would enable about 360 acres to be irrigated upon the construction of delivery structures by the Coachella Valley water district and an additional 400 acres could be served by construction of about 1½ miles of pipelines also by the district. Specifications under this procedure could be issued early in the fall and construction could be completed about May 1953. If the conduits in question can be repaired for around $10.000, the funds which will be available under this program will be increased to $479,505.

On the premise that construction of all work on unit 8, the highway bridge, and the replacement of the irrigation conduits under the railroad can be carried forward to completion as now scheduled (April 15, 1952) the program for fiscal year 1953 can be accomplished with available funds. Additional funds in the amount of $1,419,000 increase in the estimate would then be required in fiscal year 1954 to complete the program. Following this schedule specifications for the entire system on unit 8 would be issued around the first of 1953 and all construction would be completed by the summer of 1954.

The current estimates of the work remaining to be accomplished in the Coachella Valley, the costs of such work to March 30, 1952, the work which can be completed with available funds, and the amounts required to complete the system are shown in the following tabulation:

	Estimated total, Mar. 31, 1952	Cost to Mar. 31, 1952	Expenditures from available funds after Mar. 31, 1952	Balance to complete
Unit 8	$1,893,000	$74,585	$749,505	$1,068,910
Unit 9, pt. 1	1,158,000	1,156,749	1,251	0
Unit 9, pt. 2	2,103,000	129,586	1,973,414	0
Mecca-Blythe Highway Bridge	260,000	0	0	260,000
Replacement of irrigation conduits under railroa	97,000	0	0	*97,000
Drainage investigations	150,000	32,331	117,669	0
Farm-unit development	40,000	3,201	36,799	0
Subtotal			2,878,638	1,425,910
Less credits for—				
Construction facilities			−5,000	−3,667
Stores			−1,000	−7,604
Transfers, credits, etc			−28,000	−4,361
Total expenditures			2,844,638	1,419,000
*If repair of the conduits can be accomplished instead of replacement the total expenditures to complete the system can be reduced by				−87,000
Total expenditures				1,332,000

ADDITIONAL FACTORS REGARDING THE REQUIREMENT FOR THE HIGHWAY BRIDGE

At the time the Bureau constructed the Coachella main canal and detention dike across the Mecca-Blythe Highway the future status of the road was uncertain and it was the Bureau's initial understanding with the general manager of the Coachella Valley water district and the State of California that the bridge might not be necessary. Nevertheless, because of the State's bridge criteria for roads of this type, before we could obtain permission from the State to build the detention dike and the main canal across this highway, it was necessary to execute a contract which would obligate the Bureau to provide a permanent highway crossing. Such a contract was executed between the Bureau and the State of California dated March 7, 1946 (symbol and No. I76r–67). This contract ran for a period of 5 years, at the end of which time we endeavored to obtain a 5-year extension of the contract. The State demurred, however, and would agree to no more than a 1-year extension. The current renewal extends the contract to March 6, 1953.

In our discussions with the State regarding the construction of a bridge, representatives of the State have repeatedly asserted that the State wanted to abandon the highway on the grounds that the highway is not of all-weather construction, it is subject to frequent flooding that closes it for extended periods, and the cost of maintaining the bridge would be excessive. Furthermore, as the flood hazard in Box Canyon on the eastern rim of the valley appears to be without solution except at prohibitive cost, flood flows from that source reaching the detention dike and the dispersion channel at the canal are potentially capable of doing substantial recurring damage to the approaches of a permanent bridge. In event the Box Canyon road is washed out, a permanent bridge, even if passable, would not add to the highway's usability until the damage to the highway had been repaired. Representatives of the State have also indicated that it is with some reluctance that they would see the bridge constructed by the Bureau because a pattern would then be established in the opinion of the local people calling for commensurate improvement in the highway itself.

In view of the attitude of the State and lacking definite word that the bridge would be required, the Bureau felt that it would be inappropriate to load the estimate with an amount for this construction until final decision had been reached. Local public opinion, however, is definitely in favor of maintaining the highway, and we now believe that the Government can no longer delay its obligation under the contract with the State of California to build the bridge. Moreover, to the extent that funds can be made available, it is our opinion that in the absence of abandonment of the highway, construction of the bridge should be completed while we still have a competent engineering organization in the area.

Senator KNOWLAND. There was an honest difference of opinion. The district thought they had a firm amount. The Bureau thought while there was that contract, the people who made the contract had no authority to make it.

The committee had gone ahead with the language we put in the last time the appropriation bill was up that they should go into court and get a determination. If the court decided that the district had a firm contract, the Government had an obligation to complete it.

If not, they would have to repay it.

Mr. LINEWEAVER. The Department of Justice has now referred the matter to the district attorney at Los Angeles to take appropriate action, and we are now advised litigation has been instituted.

LEAKS IN FRIANT-KERN CANAL DISTRIBUTION

Senator KNOWLAND. There is one additional matter. I do not want to encumber the record, but perhaps you could throw some light on this.

When I was down in Tulare and Kern Counties—and I have addressed a letter to the Bureau and I have since yesterday found a letter from Mr. Boke saying he wanted to have an opportunity to talk with me, or his representatives, as soon as possible.

In regard to the distribution system down there in that district, they are greatly concerned because the new distribution system that is being put in apparently is having many leaks in it.

It was found that apparently the Bureau had authorized a contractor to dump a lot of manure into the pipes so they would not leak. The district was quite concerned. They did not want to be put in the position of accepting a system that they thought was not satisfactory.

If the facts as they presented them to me were correct, I would think it was a very disturbing thing. I recognize there are always two sides to these problems that come up.

Mr. LINEWEAVER. I would like to identify the district. It is the San Joaquin municipal utility district. We will be glad to put a statement in the record which shows just exactly what the situation is, and the Chief Engineer has just been out there working with the regional people, the district, and the contractors. He is very hopeful a solution will be reached. I will be glad to place a full statement in the record, together with my letter to Senator Knowland of today.

Senator HAYDEN. That may go into the record at this point.

Senator KNOWLAND. I would like to have permission to put in the correspondence I have had with them, and in fairness I would also like Mr. Boke's letter to me put into the record.

I thought we might have in the future some consideration on this and, therefore, since it has been brought to my attention, it should be before the committee.

(The material referred to follows:)

DISTRIBUTION SYSTEM LEAKS, SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT, CENTRAL VALLEY PROJECT

The distribution systems in the San Joaquin Valley for units 1, 2, and 3 of the southern San Joaquin municipal utility district are being constructed under contracts between the Bureau of Reclamation and the United Concrete Pipe Corp. Precast concrete pipe is being used; the pipe subjected to higher operating heads is reinforced with steel and the branch laterals with heads generally less than 25 feet are constructed of unreinforced concrete irrigation pipe. In accordance with customary and successful practice, we require that on the main pipe laterals rubber-gasketed joints be used, while on the smaller pipe sizes and sublaterals plain mortar joints. The physical completion of the units are about as follows: Unit 1, 100 percent; unit 2, 80 percent; unit 3, 25 percent.

The leakage appears after the lines are physically completed and water is turned into the lines either for testing or for use of the farmers. In some instances the farmers have requested that water be turned into the lines for their purpose prior to the time that testing operations could take place. The exact effect of this procedure has not been determined. Distribution lines are accepted from the contractor only after they meet the Bureau's rigid specification requirements, and so far no parts of the systems have been accepted from the contractor or turned over to the utility district for their operation and maintenance. Until the lines are thoroughly seasoned, it is not unusual for leakage to occur and the contractor's effort to reduce the flow through the introduction of organic material into the line is not an exceptional practice.

At Senator Knowland's request for copies of the Bureau's reply to the irrigation district on this matter, there is submitted the following: Copy of Senator Knowland's request by letter of April 15; the Bureau's reply of May 1; and a copy of the report of the consulting engineers, Blackie & Wood, to the district, dated March 28.

MAY 1, 1952.

Hon. WILLIAM F. KNOWLAND,
United States Senate, Washington, D. C.

MY DEAR SENATOR KNOWLAND: By your letter of April 15, in regard to the leakage problem on the distribution systems being constructed for the southern San Joaquin municipal utility district, and your personal inquiry during the

course of the appropriation hearings today, you indicated your desire to be informed regarding this matter and also receive a copy of any reply which we may have sent the district. The district brought this problem to our attention some time ago, and Chief Engineer McClellan has just returned to Denver from a conference with the district and construction contractor, United Concrete Pipe Corp. Copies of correspondence between the district, the Chief Engineer, and the regional office have received our attention.

As you are probably aware, the situation with respect to the distribution systems in the San Joaquin Valley has been a matter of considerable concern. Mr. Green, the manager for the district, has been very alert in bringing all problems to our attention and has frequently consulted with our chief engineer, regional officials, and construction people. In addition, the district has secured the services of independent consulting engineers to consider the problems involved.

In the letter Mr. Green sent to Construction Engineer Durant of March 26, he took particular exception to the methods being used by the contractor to arrest the leaks in portions of the system and alleged that they amounted to fraudulent practice. Such allegation disturbs us, because Mr. Green did not object to the use of these methods at the time they were proposed.

There are now three contracts in force for each of the three units in the district. While all of the pipe in unit 1 has been in place for about a year, none of the lines have been accepted by the Government because of the unusual amount of leakage, mostly in the smaller pipe sizes where cement and mortar joints were used. The matter of responsibility for such leaks has been the subject of controversy for some time. The Government holds that the contractor is responsible for the leaks, primarily due to faulty workmanship, whereas the contractor has alleged faulty design, poor bedding material, temperature differential, and other causes.

The Government has advised both the district and contractor that none of the lines will be accepted until a system free of leaks is provided. The contractor, Mr. Green, and members of the chief engineer's staff met on January 16 in Denver, Colo., at which time this question was thoroughly discussed and the Government's position was firmly established. At that time the use of organic matter in the pipe to reduce the leakage was discussed and no objections were raised. Since that time the contractor has been using organic matter in the pipeline for testing operations. Although the chief engineer did not believe that this method would to any great extent correct the leakage problem, he saw no reason to object to the procedure, as such method has been known to reduce or stop leakage in pipelines. At the same meeting, in the presence of Mr. Green, the contractor was advised that prior to final tests, any lines in which the organic material had been used must be thoroughly flushed out and drained. Mr. Green was also advised by the independent consulting engineers that the contractor had not fully complied with the specifications, and that the leaks were the result of faulty workmanship in the mortar-type joints. This coincides with our conclusion that it is the responsibility of the contractor to correct such deficiencies.

In view of the position of the Bureau of Reclamation, we are at a loss to understand Mr. Green's continuing concern, since none of the lines have as yet been accepted by the Government and, of course, the district has not been requested to assume any responsibility for the work performed. All of the Bureau's contracts require that good, usable, pipe distribution systems be furnished and it is our intention that these requirements be met before the systems are accepted and turned over to the district for its operation.

As a result of the above-mentioned conference, we believe the concern as expressed by Mr. Green in his letter to Mr. Durant about the immediate problem and the Bureau's attitude should be allayed. We are in touch with this situation and will keep you currently advised.

Sincerely yours,

G. W. LINEWEAVER,
Acting Commissioner.

UNITED STATES SENATE,
COMMITTEE ON APPROPRIATIONS,
April 15, 1952.

Mr. MICHAEL STRAUS,
Commissioner, Bureau of Reclamation, Washington, D. C.

DEAR MR. STRAUS: Last week while I was in California officials of the Southern San Joaquin Municipal Utility District of Delano, Calif., contacted me regarding the difficulty between the district and the Bureau of Reclamation concerning

the distribution system which had been constructed for the Bureau of Reclamation by the United Concrete Pipe Corp.

I understand that a copy of the district's letter, dated March 26, 1952, addressed to Mr. R. K. Durant, chief construction engineer for the Bureau in the San Joaquin Valley, was mailed to you. In view of the problem raised by the district, I would appreciate receiving copy of any reply which you may have sent to the district.

Sincerely yours,

WILLIAM F. KNOWLAND.

SAN FRANCISCO, CALIF., *March 28, 1952.*

Subject: Southern San Joaquin Municipal Utility District, condition of distribution system.

Hon. BOARD OF DIRECTORS,
Southern San Joaquin Municipal
Utility District, Delano, Calif.

GENTLEMEN: Pursuant to your request, as transmitted by your manager, Mr. Burt Green, under date of March 14, 1952, there is submitted below our conclusions regarding the unsatisfactory condition of the presently constructed portion of the concrete-pipe-distribution system of the Southern San Joaquin Municipal Utility District. In accordance with instructions, we have given special consideration to the following items:

(1) The cause of the present unsatisfactory condition of unit 1 and the first part of unit 2.

(2) Recommendations as to measures that should be taken to remedy the present condition.

(3) The necessity of complete removal and replacement of the present installation in order to obtain a satisfactory system.

(4) The extent of our agreement with the opinions expressed in separate reports by Mr. Longwell and Mr. Sullivan, consulting engineers for the contractor.

Our conclusions have been arrived at as the result of two inspection trips in the district, one during the latter part of last November and the other late in December 1951; conferences with various officials and employees of the district, the United States Bureau of Reclamation, and the contractor; discussions with long established and highly successful independent concrete-pipe contractors and with interested engineers in no way connected with this work; a study of the plans and specifications under which the work was done; a review of reports by two different consulting engineers for the contractor; an analysis of such basic statistical data as has been uncovered by us or made available to us; a limited instrumental survey of a portion of one sublateral; a preliminary investigation of probable stresses and strains; and the general experience of the writers.

PRESENT CONDITIONS

The portion of the district's distribution system herein considered was laid out to serve the area within the district lying generally to the north of Pond Avenue and west of the Friant-Kern Canal. As laid out it involves some 17½ miles of main laterals and approximately double that mileage in sublaterals. We understand that centrifugally spun concrete pipe, with rubber-gasket joints, was used for all main laterals, and that only a negligible amount of quickly repaired trouble developed on these lines. For the sublaterals, however, machine-tamped or vibrated pipe, with plain mortar joints (designated type A) was used exclusively, except for certain special situations of limited extent.

It is in these sublaterals, with their type A joints, that serious trouble has developed. Leaks have developed with startling frequency. Most of the leaks are the results of cracked joints, although a substantial number of porous or cracked pipe have been uncovered. A summary of leaks in the sublaterals of unit 1 that had been repaired to September 5, 1951, showed 828 leaks due to cracked joints, 166 due to porous pipe, and 15 due to cracked pipe. Thus, of the leaks repaired to this date, 81.9 percent resulted from cracked joints and 18.1 percent from defective pipe.

The summary of September 5, 1951, showed 1,001 leaks repaired in 62,051 feet of pipeline, an average of a leak every 61.4 feet. Subsequently many new leaks occurred and the average distance between leaks is now appreciably less

than the above figure. For instance, the average spacing of leaks on the date of the summary in lateral 119.6W–2.55 was 67.1 feet, but November 27 was only 42.7 feet. No fixed pattern can be discerned as regards the spacing of leaks; at times several successive joints show leaks while, in other instances, it may be several hundred feet between leaks.

CAUSE OF PRESENT CONDITION

As above indicated, the leaks that have occurred in the sublaterals of the district's distribution system naturally fall into two major groups; to wit, defective pipe and cracked joints. The defects in the pipe normally consist of porous spots in the pipe walls or cracks of more or less limited extent in the walls of the pipe. In both cases, the defects are the result of improper manufacture. However, it is believed that proper repairs will permanently cure these defects in practically all instances. On the other hand, the cracked joints present a much more complicated and a far more serious problem.

After considering all of the factors and data available to us, it is our opinion that poor, improper, and inadequate workmanship is the major cause, by far, of the many plain mortar joint failures in that portion of the district's distribution system under consideration herein. It is further believed that design features and miscellaneous isolated conditions have caused joint failures to a limited extent and have contributed extensively to failures that are primarily the result of poor workmanship. Some of the data considered and reasoning done in reaching this opinion is presented in the following paragraphs.

Notes made by district employees setting forth their observations during 14 all-day inspections of pipe laying during August and October of last year indicate inadequate workmanship in the following particulars:

1. On numerous occasions, it was noted that the mortar used was contaminated with dirt to a highly detrimental extent. At least one sample of the mortar taken from a joint being repaired contained lumps of dirt that could be removed easily with one's fingers.

2. It was frequently observed that the joint was not completely filled with mortar, or that part of the mortar fell out of the joint. It was also frequently noted that no attempt was made to remedy such conditions.

3. Many instances were recorded where the space between joints was excessive, at times the joint space was observed to be an inch or more.

4. A considerable number of notations were made to the effect that the bands did not extend all the way down to the pad of mortar under the pipe, or were not properly joined to the pad. At times it was also noted that the mortar in the lower part of the band had pulled away from the pipe and was not corrected. Occasionally, the use of curing compound on the bands was omitted.

5. Instances were cited where the pipe was improperly bedded, or stabilized, so as to prevent lateral displacement.

6. Some cases were recorded where pipe was laid with far greater divergence from true alinement and grade than allowed by the terms of the specifications.

7. At times notations appear to the effect that backfilling was too far behind the pipe laying, or that compacting of the backfill was being done only when higher officials were present.

8. Very frequent mention is made of the use of porous pipe, cracked pipe, and pipe with the tongue and groove lip missing for as much as 8 inches.

9. Most of these reports indicate that there were numerous occasions when pipe was laid without any Government inspector being on the job; that the Government inspector looked inside the pipe only a few times a day; that the inspector frequently did not examine the bands for a considerable period of time; and that there was occasional disagreement between the various levels of both organizations.

10. One instance was recorded where the pipe layer and bander both wanted to remove and relay a section of pipe that had gotten a considerable amount of dirt in the joint. They were overruled by their foreman and told that "if that's the way the big boys want it, that's the way it will be." When the pipe layer and bander said they were not accustomed to doing that kind of work, they were ordered by their foreman to get back to work or quit.

It appears to us that even the most casual consideration of the data contained in the notes of these district employees must lead to the unavoidable conclusion that the workmanship in connection with laying pipe was well below the standards that should have been attained. In addition, it seems obvious that the inspection by the Government was anything but strict. As regards the laxness of

inspection, we were told by Bureau officials that they were relatively new at the concrete-pipe game and, therefore, intended to judge by the end result instead of by passing on the adequacy of each individual specified operation, as they practically always do. It seems to us that the specifications were written along the lines of the Bureau's usual standards and that there is no provision therein for judging on the basis of the end result.

Further evidence of inadequate workmanship comes from a review of such data as we were able to obtain from the Bureau, which indicated that well over half of the leaky joints that were opened up, examined and repaired showed definite indications of one or more defects. A contributing factor in the lack of first class workmanship is believed to arise from the necessity of the contractor obtaining his pipe laying crews from union lists instead of utilizing known men with the high degree of skill and integrity required. Finally, one cannot overlook the great mileage of concrete pipelines laid with plain mortar joints, both in this immediate area and elsewhere, that have been highly successful over a very long period of years. This has been true for conditions of high and low heads, intermittent and continuous flow, constant and widely fluctuating temperatures, and all other extremes of exposure.

The principal stresses that a joint is called upon to transmit are those due to the hydrostatic head, to temperature changes in the line, to moisture changes in the line, to differential foundation settlement, and to displacement by external concentrations of loads. If cracks are to be avoided in a pipeline with plain mortar joints, there can be no movement in the line that cannot be cared for by the elasticity of the material composing the line. On the other hand, rubber gasket joints will permit a considerable amount of both longitudinal and lateral or vertical movement.

Since mortars and concretes are 6 to 12 times as strong in compression as in tension, it almost always develops that failures in concrete pipelines occur from a force or a combination of forces causing tension. A 1:2 mortar should attain an ultimate tensile strength of from 400 to 500 pounds per square inch in from 7 to 28 days, and even more with greater age.

Rough computations indicate that the maximum hydrostatic head required on any of the district's constructed sublaterals would result in a tensile stress in the joint of only about 10 pounds per square inch in the joint. However, water hammer, caused by a too rapid opening or closing of a gate in the line could increase this many times. Normal operating procedures should practically eliminate the effect of water hammer.

It is estimated that the average temperature of the ground surrounding the pipelines of the district is approximately 65° F. and that it will vary only a few degrees from this figure during the high of summer and the low of winter. At times, the water from the Friant-Kern canal is expected to be as much as 15 to 20 degrees colder or warmer than the average soil temperature. Hence, it appears that provision must be made for approximately a 20° F. change in the temperature of the pipeline. A drop of this amount would create a tensile stress in the mortar joint of about 200 to 210 pounds per square inch, depending on the size of the pipe.

If a pipeline dries out after it is thoroughly wet, very substantial tensile stresses will be set up. However, once a line is thoroughly wet, drying out occurs very slowly because of the moisture in the ground and the lack of circulation of air in the line. It seems most unlikely that a pipeline will dry out to any substantial extent under anything approaching the normal operating conditions for the district's sublaterals. Hence, it is concluded that tensile stresses from this cause will never exceed these from a 20° F. drop in temperature, that the two stresses can never combine with a maximum of both, and that the combined total of the two will not exceed about 250 pounds per square inch.

To develop the required tensile strength, it is necessary for the mortar to adhere to the concrete of the pipe. This adhesive strength per unit of area is usually slightly less than the tensile unit strength under the best of conditions, and appreciably less under unsatisfactory conditions. However, the area of contract between the mortar and the pipe is somewhat greater than the cross-sectional area of the mortar joint, and the full strength should be developed if the mortar is applied properly. This operation requires the highest class of workmanship.

If a pipeline settles locally, a crack will be opened up on the bottom of the line and companion cracks will appear nearby on the top of line on either side of the bottom crack. A similar situation will develop if the line is displaced laterally, the cracks then being on the sides. However, a properly bedded line in the prac-

tically ideal material encountered throughout most of the district could not move except under the most unusual conditions. While there is some indication of vertical or lateral displacement of the pipelines, it is our opinion that it is almost entirely the result of improper bedding.

From the data and analyses contained in the several foregoing pages, it appears that the matter of adequate workmanship is definitely the major reason for the many leaks in the district's sublaterals. The factor of safety in plain mortar joints is quite small under the conditions that prevail in the southern San Joaquin municipal utility district, but this only emphasizes the premium on high-quality workmanship. We can see no reason why, given first-class workmanship, a satisfactory distribution system with plain mortar joints cannot be installed in the district.

The installation of expansion joints in a concrete pipeline with plain mortar joints is not functionally correct, in our opinion. Such joints permit the pipeline to move as the result of compressive stresses and thereby reduce their magnitude. This reduction tends to increase the tensile stresses when the opposite forces come into play, as the cushion of locked-in-compressive stress is at least partially gone. Because of the much lesser strength in tension than in compression, the probability of tensile failure is greatly increased.

REMEDIAL MEASURES

If our conclusion as to the cause of the leaks is accepted, then the obvious remedy is to continue repairing the defects until the system is satisfactory. It is our belief that the progressive development of leaks in the district's concrete pipe distribution system can be explained best on the basis of faulty workmanship. The weakest joints fail first and, when these are repaired, the next weakest fails. It is anticipated that this will continue until all joints that are sufficiently defective to cause trouble have failed and been repaired. If the repairs are made during periods when the lines are at or near their seasonal minimum temperature, it is believed that the amount of work would be lessened and the time required materially decreased, as more residual compression could be kept in the lines.

The only other apparent remedy is the complete removal and replacement of the lines, either with the same type A joints properly made or with the more expensive, but more certain, rubber-gasket type of joints. Such a procedure is bound to be very expensive to some one and due consideration should be given to where the load will fall before embarking on it. Therefore, it seems expedient to concentrate on repairs of the existing lines until an unquestioned answer is found.

NECESSITY OF COMPLETE REPLACEMENT

The necessity for complete replacement in order to obtain a satisfactory distribution system for the district is, at best a relative one. In our opinion, the lines now installed can be repaired so as to provide a satisfactory distribution system without removal and replacement. This seems apparent from the fact that only a negligible number of the joints repaired have given subsequent trouble, and this may well be due to improper repair. How much time and work will be required to make the necessary repairs is highly conjectural, and the overall economy may be subject to considerable questioning. Consideration will have to be given to possible use or nonuse of the lines during repairs and especially to who will have to make and pay for the repairs. In other words, we are convinced that it is possible to repair the present lines so that they will be satisfactory, but that other factors may control and certainly will influence any final decision in this connection. In other words, much of any decision in this connection is political and economic and not engineering.

EXTENT OF AGEEMENT WITH CONTRACTOR'S CONSULTANTS

The individual reports of the two consulting engineers for the contractor, Mr. Longwell and Mr. Sullivan, conclude that (1) the contractor has fully complied with all requirements of the specifications, both as regards materials and workmanship; (2) the type-A plain-mortar joint is not suitable for the conditions encountered in the district's distribution system; (3) the leaks are almost entirely the result of the use of this type-A joint; (4) the contractor should not be responsible for repairing leaks unless it is proven that they are due to defective workmanship or material; (5) there is no provision in the specifications for the

use of the pipelines prior to their acceptance from the contractor; (6) that the provisions of the specifications regarding tests of the pipelines is vague and indefinite; and (7) the work was rigidly inspected and approved.

As has heretofore been pointed out in considerable detail, we feel that there has been a large amount of poor workmanship and lax inspection, and that these are responsible for the great majority of the leaks. Type A joints have been used successfully for many years on a large number of installations with at least as severe operating conditions as required in the district's distribution system. Type A joints require a very high degree of skill and know-how for their successful installation, whereas the rubber-gasket joint requires much less. Lack of rigid inspection has been noted and is admitted by the Bureau as far as pipe laying is concerned. Hence, we cannot agree with the first three and the last of the conclusions listed above.

We are inclined to agree in large part with the other three conclusions. The specifications set forth the requirements as to the nature and quality of all materials and the nature, extent and detail of the work to be done, but we can find no provision for judging on the basis of the end result. There are specifications for laying pipe that do not prescribe any of the details, but require that the leakage shall not exceed a very nominal amount at any time during the year following completion.

We agree that there is no provision in the specifications for use of the lines prior to acceptance from the contractor, but do not believe that such use has played any significant part in the unsatisfactory condition of your distribution system.

We also agree that the test provisions are rather vague and indefinite and that the contractor has not been able to exercise his option of testing repairing leaks for 3 years. However, we see but little connection between this and the present deplorable condition of the district's distribution system.

Respectfully submitted.

BLACKIE & WOOD, CONSULTING ENGINEERS,
E. E. BLACKIE.

OPENING STATEMENT TO THE WATER PROBLEMS INTERIM COMMITTEE ON APRIL 28

Senator Williams and members of the State water problems committee, I should like to preface my opening statement with a few remarks concerning the background of the Southern San Joaquin Municipal Utility District and the attitude that has prevailed down to the present moment in our association with the Bureau of Reclamation relative to our problems.

We have consistently acceded to the requests of the Bureau of Reclamation in every respect. We have attempted to work with them in a cooperative spirit, firmly believing that their policies are directed to our welfare and that working together our principal purpose and very existence could be realized with the advent of supplemental water from Friant-Kern canal distributed through a system constructed for the Bureau of Reclamation by the contractor, United Concrete Pipe Corp. We wish to publicly state at this time that we are grateful to the Bureau of Reclamation for bringing water to our doorstep through the Friant-Kern canal to supplement our ever-decreasing underground supply. Without this water this community would cease to exist in the foreseeable future. We are eternally grateful to the Congress of the United States for furnishing interest-free money for the construction of the distribution system to bring this supplemental water to our farms.

The difficulties involved in the construction of our distribution system were made apparent quite early in the year 1951. Unit I of this system, which is colored yellow for easy reference on the map in your folder, comprising approximately 22 miles of pipeline, had a completion date of January 31, 1951. Through the delay of repeated repairs to attempt to make these lines serviceable, they were not made available to us for the distribution of water on farm lands until April 21, 1951. The urgency of this supplemental water cannot be emphasized too strongly. The farmers in this area put up with this delay and the innumerable leaks making mud puddles on their farms, thereby increasing the difficulty of farm operations, yet the people of our district took all of this in good grace. They were cognizant of the difficulties and problems that the contractor and the Bureau of Reclamation were confronted with, yet made no complaint even when during the height of the irrigating season portions of the laterals were continuously shut down for repairs, thereby forcing the

farmers to resort to their inadequate pumping facilities in an attempt to complete their irrigation. This district became aware of the deplorable conditions of these lines as early as last May and realized at that time that it would be next to impossible to obtain a leak-free distribution system in unit I. We were assured both verbally and by letter from the Bureau of Reclamation that these defects in the lines would be corrected, yet as more sublaterals were made available to us the same conditions prevailed in those that were apparent in the prior lines in use. We continued to be apprehensive as to the ultimate condition of these lines when turned over to us for operation and questioned the Bureau of Reclamation engineers as to the advisability of continuing the laterals on unit II using the same methods as had been used in unit I.

Again we were assured that all of the errors indicated in unit I would be corrected in unit II, and we were also assured by letter from the construction engineer that we would have the use of a portion of this first lateral in unit II by August 1, 1951. The board of directors decided in a meeting held in the latter part of June 1951 to withhold criticism on the condition of these lines in unit I until such a time as unit II was made available to us and we could determine whether the faults that had appeared in unit I had been corrected in unit II. As the date of August 1 approached and checks on the use of several of the sublaterals in the first lateral of unit II were made, it showed definitely that no corrections had been made in any of the errors and faults that had showed up in unit I. The first half-mile check had 45 leaks on the first test. This was on Driver Road, or lateral 1.3N from 124.5W. Another test made was on 1 mile going through the Lanza Vineyards, again off of 124.5W on lateral 0.8N. This 1 mile showed 108 leaks on the first test. The Bureau of Reclamation then told us that if we desired the use of these lines in accordance with their promise, that is as of August 1, and we used the lines for the distribution of water to the farmers, then it would have to be on an acceptance basis, the Bureau accepting that sublateral from the contractor as completed and the district in turn accepting it from the Bureau. This matter was taken up with the board of directors at a special meeting and they decided that in view of the experience in unit I they would request the Bureau to insist that the contractor conform in every way with the provisions of his contract, and that when the lines in unit II were in suitable condition for the Bureau to accept them, then, and only then, would we agree to the use of them. The contractor to this day has failed to put any of the sublaterals off of the pond, or 124.5W lateral of the second unit, into a satisfactory condition that might be ready for acceptance.

On August 9, 1951, Mr. Michael Straus, Commissioner of the Bureau of Reclamation, Washington, D. C.; Mr. Richard L. Boke, regional director of the Bureau of Reclamation, Sacramento; Mr. Jack W. Rodner, district manager of the Bureau of Reclamation, Fresno; as well as many other Bureau of Reclamation employees, met at the home of a prominent rancher in this district, Mr. Martin Gutunich, together with several members of the congressional Interior Affairs Bureau of Reclamation Committee. There were a number of prominent farmers in attendance as well as some members of our board of directors. Being extremely apprehensive as to the condition of these lines, and the ultimate acceptance of them by the district, one of the members of the board of directors asked the question point-blank of Mr. Straus, "If we would have to accept these lines in such a faulty condition, who would pay for the tremendous cost of repair?" We all were given verbal assurance at that time by Mr. Straus that we would not have to accept these lines until they were in a condition satisfactory to us, and we would not have to bear any additional cost for putting them in that condition. Although this statement was confirmed by one of the Congressmen in attendance, Mr. Norris Poulson, we were never able to have it reduced to writing, the matter always being referred to Mr. Richard L. Boke, regional director, by Mr. Straus, who assured us in two letters, June 28, 1951, and October 18, 1951, that before we had to take these lines over for operation they would be in a satisfactory condition. We assumed that this meant satisfactory to us, but in view of recent developments we feel that this is not so. It would be satisfactory to the Bureau of Reclamation, and in view of the horse manure and other organic materials used in an attempt to seal the leaks and breaks in this line and get them ready for acceptance, this opinion has been confirmed. The board of directors are on record as refusing to accept these lines until they are satisfactory to them and will not pay for the evident tremendous cost of putting them in that condition in spite of our contractual obligations.

We have had other problems with the Bureau of Reclamation which we felt we could solve around the conference table. The directors always attempted to solve these problems directly with the Bureau of Reclamation, but in the case of the present fraudulent method being used in an attempt to gain acceptance from the Bureau of Reclamation by the United Concrete Pipe Corp. of these defective lines, and the use of the subterfuge being permitted by the Bureau of Reclamation, the cost of maintenance of these lines in their present condition could very well be prohibitive.

You have before you gentlemen correspondence relative to all of the points brought up in my statement verifying and confirming the same, together with an index for easy reference. The basis for the request for your assistance is the letter dated March 19, 1952, addressed to Mr. Rodner, and when no answer was received and the continued use of this method had been noted, then the letter of March 26, 1952, addressed to Mr. R. K. Durant, construction engineer, Bureau of Reclamation, Lindsay, Calif., with copies to all Bureau officials was mailed. I should like to read this letter and have my opening statement supplemented by the letters you have before you and be made a part of the record of this hearing.

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT,
Delano, Calif., March 26, 1952.

Mr. R. K. DURANT,
Construction Engineer, United States Bureau of Reclamation,
Lindsay, Calif.

DEAR SIR: A letter addressed to Mr. Jack Rodner with carbon copy to you dated March 19, 1952, relative to the use of horse manure and other organic materials used in the attempt to place our distribution system in line for acceptance, as well as our telephone conversation of March 21, 1952, is the basis for a demand made at a special meeting by the board of directors Monday afternoon, March 24, 1952, in which relief and protection was asked by the following motion:

"Moved by Harrison, seconded by Nispel that the district request the assistance of the interim committee to clarify and correct the conditions of our distribution system presently being constructed by the Bureau of Reclamation, specifically the use of horse manure and other organic materials to put sublaterals in condition for acceptance and the use of artificial low heads in portions of sublaterals for testing purposes, and that all other avenues that are or might be available be utilized to alleviate the situation. Motion carried unanimously."

This demand is, namely, that the use of horse manure and other organic materials used in an attempt to obtain acceptance of the distribution system presently being constructed by United Concrete Pipe Corp. be discontinued immediately, that no portion of our distribution system that has had this treatment will be accepted by this board under any condition until a thorough testing period under normal operating conditions be consummated of a length of time sufficient to determine the actual condition of the lines in question, that the time elapsed be such that there will be no question of the disintegration of this material, and that all leaks and breaks have been repaired in accordance with the specifications and contractual obligations of the contractor.

This action has been made necessary by the facts as disclosed in our telephone conversation of March 21 in which you stated that these methods and treatments are with the full knowledge and approval of the chief engineer, Mr. McClelland, of the Bureau of Reclamation in Denver, and your further statement that this is common practice among concrete-pipe manufacturers. Your statement has been definitely disproved by contact by me of all of the concrete-pipe manufacturers in Kern and Tulare Counties, as well as others in Fresno, and with 1 exception out of 14 contacted this was proved to be far from "common practice," but definitely unheard of and rejected by all but that one exception. The one exception admitted using it once in order to allow a farmer a much-needed irrigation, and immediately after that irrigation, the line was repaired in the orthodox manner.

It is inconceivable by the directors of the southern San Joaquin municipal utility district, as well as many farmers contacted in this area, that the Bureau of Reclamation would approve of such a fraudulent method to obtain the acceptance of this distribution system. It is admitted by all contacted that this method is temporary, and would mean after acceptance a tremendous burden to this district in repairs, and especially so when fictitious low heads are main-

tained on sections of the sublateral in order to obtain the acceptance of a small portion of a sublateral. I am referring in this instance to the holes that are knocked out of the baffle plate 5 feet above grade so as to relieve other portions of the sublateral of the normal operating head when the water must go over the top of the baffle which, in some instances, is up to 25 feet. I mentioned this item to you in our conversation of Friday afternoon, and you disclaimed all knowledge of this procedure, yet your entire crew in the Delano area having anything to do with our system had full knowledge of it and apparently nothing was done to stop them from using this subterfuge in order to gain acceptance.

This is a deplorable situation and one again in which I wish to emphasize the inconceivability by the people in this area that the Bureau would condone such fraudulent tactics. This letter is written with the full and unanimous approval of the board of directors and authorized by them in a special meeting to discuss this subject.

Your compliance with our above requests are expected.

Very truly yours,

BURT GREEN.

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT,
Delano, Calif., March 19, 1952.

Mr. JACK RODNER,
District Manager, United States Bureau of Reclamation,
Fresno, Calif.

DEAR MR. RODNER: It has come to our attention that the contractor has been using horse-manure treatment in the lines that he is attempting to test for Bureau acceptance on 124.5W on laterals 4.3N and others. The board of directors of the Southern San Joaquin Municipal Utility District has expressed concern over this method of attempting to plug leaks and put the lines in readiness for acceptance by the Bureau of Reclamation. One of our directors expressed the belief that there was not enough horse manure in the entire area to keep these leaks plugged in the lines for the 40-year period necessary on our contractual obligations. We feel that any lines that have had this treatment, and apparently a good many of them have had it on the sublaterals running north of 124.5W, should all be thoroughly tested with the water drained out of the lines and then run back in again under a full head as per specifications before acceptance, for it is conceivable that these lines could be made to conform to the specifications in testing, and if that were the case, under the terms of the contract as we understand them, it would be mandatory upon the Bureau of Reclamation to accept these lines from the contractor.

These suggestions are made to you at the instigation of members of our board of directors in the hope that you will give consideration to them and in the belief that this method of treatment has been done without your knowledge.

Thanking you for your continued cooperation and attention, I am,

Very truly yours,

BURT GREEN.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
REGION 2, SAN JOAQUIN VALLEY DISTRICT,
Fresno 21, Calif., March 28, 1952.

BOARD OF DIRECTORS, SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT,
Post Office Box 337, Delano, Calif.
(Attention Mr. Burt Green.)

GENTLEMEN: This is in response to your letter of March 19, 1952, relative to the contractor's use of horse manure in the pipe lines. I also wish to refer to the meeting, which you attended, in Denver, Colo., on January 16, 1952, between Bureau of Reclamation and contractor representatives.

I have received a report from my Lindsay construction office which outlines the situation as follows:

The use of some fibrous material, such as horse manure in concrete pipe lines to correct leaks was discussed at some length in the Denver meeting. At that time you did not indicate any objections to the experimental use of horse manure, or any other material that might be beneficial in correcting the problem the contractor is confronted with on your distribution system.

Fibrous materials, as well as other substances, have been used frequently toward the stopping of leaks in concrete conduit water lines, and although the

use of any material is not a positive means of correcting leaks it has been of some benefit.

The experimental use in the Southern San Joaquin municipal utility district distribution system by the United Concrete Pipe Corp. has been permitted by the Bureau of Reclamation in a spirit of cooperation in trying to assist the contractor in arriving at some solution of the problem with which he is confronted.

There is considerable question, as has been stated to you, as to whether the use of the material will in any way help the leak situation. However, from the standpoint of economy, as well as our interest in constructing a satisfactory distribution system, it is intended to consider every possibility in solving the problem. In the event that the material will stop the leaks, its continual use will not be permitted unless it is believed that it will be a permanent benefit. In any event, before the lines in which the horse manure has been used are accepted by the Government, they will be drained and flushed out before the final test is made.

I should again like to call your attention to the assurance of the Chief Engineer of the Bureau of Reclamation, which was contained in my letter to you under date of March 19, 1952, that the construction contract is between the Government and the contractor, and all guarantees will be enforced. This means that the contractor must produce sound, serviceable lines before they will be accepted by the Government or turned over to the district for their operation.

Very truly yours,

JACK W. RODNER,
District Manager.

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT,
Delano, Calif., April 2, 1952.

Mr. JACK W. RODNER,
District Manager, United States Bureau of Reclamation,
318 Patterson Building, Fresno, Calif.

DEAR MR. RODNER: I should like to reply at length to your letter of March 28, 1952, relative to the horse-manure treatment of our lines in an attempt to clarify some apparent false impressions you might have as to our objections.

In your third paragraph you state that this subject was brought up at the Denver meeting and discussed at some length and that I did not indicate any objections to its use. As I recall, this method was mentioned briefly as one temporary solution that some farmers use in order to obtain an irrigation, and that this might be used to advantage to repair the leaks in unit I. At this there was a general laugh and the subject was dropped. This was so inconceivable that it did not impress me enough to even make mention of it in the notes that I took at this meeting. Secondly, I was in the presence of the top engineers of our country, and my impression was that these men having our welfare at heart would do anything to gain the use of these lines for our district as long as there was no question of the official acceptance. This was gratifying to me, for I felt that I was surrounded by people who had our interests at heart and who would protect us from any machinations attempted by the contractor.

In your fifth paragraph, your opening words are "The experimental use." The district has contended at all times that this construction is an experiment, and, in my previous words, the "guinea pig for like construction along the Central Valley system." You have denied this in previous correspondence, but apparently you now concur. You go on to say "* * * has been permitted by the Bureau of Reclamation in a spirit of cooperation in trying to assist the contractor in arriving at some solution of the problem with which he is confronted." The contractor's words to two directors were "We were instructed." This, in our opinion, is inexcusable. The district refused the use of this line in August 1951 because the contractor elected to put it under test, and if we used it, we would automatically be forced to accept it according to his demand. We asked that the contractor be made to conform to all of the provisions of his contract, and when the Bureau accepted these lines, then, and only then, would we use them. Yet you have permitted "the use of this material" which by any standards, is a subterfuge in an attempt to gain acceptance. It is apparent from your wording in the next paragraph that your concern is primarily with the contractor and that the district must perforce accept your policy.

In your sixth paragraph, it is conceded that this practice will help temporarily. But it is conceivable that repairs will have to be made over a period of as much as 3 years, as this material washes out or disintegrates, that the contractor should make now. As for the economy of horse manure over mortar and concrete,

there can be no question, but as to the constructing of a satisfactory distribution system "using this method," there are grave doubts.

In your seventh paragraph, you call attention to the assurance of the Chief Engineer of the Bureau of Reclamation contained in your letter to us under date of March 19, 1952, that the construction contract is between the Government and the contractor and all guaranties will be enforced. We appreciate the fact that the contract is between the Government and the contractor, but you must also realize that we are vitally affected, and in view of Mr. R. K. Durant's statement by telephone to me recently that Denver's position is that there is no feeling of a gauaranty of a watertight line and that they now state that "they will see that we get as good an irrigating system as possible under this type of construction," we are deeply concerned at the ultimate result of this construction.

Very truly yours,

BURT GREEN.

APRIL 15, 1952.

Mr. MICHAEL STRAUS,
Commissioner, Bureau of Reclamation, Washington, D. C.

DEAR MR. STRAUS: Last week while I was in California, officials of the Southern San Joaquin Municipal Utility District of Delano, Calif., contacted me regarding the difficulty between the district and the Bureau of Reclamation concerning the distribution system which had been constructed for the Bureau of Reclamation by the United Concrete Pipe Corp.

I understand that a copy of the district's letter, dated March 26, 1952, addressed to Mr. R. K. Durant, Chief Construction Engineer for the Bureau in the San Joaquin Valley, was mailed to you. In view of the problem raised by the district, I would appreciate receiving a copy of any reply which you may have sent to the district.

Sincerely yours,

WILLIAM F. KNOWLAND.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Sacramento, Calif., April 24, 1952.

Hon. WILLIAM F. KNOWLAND,
United States Senate,
Senate Office Building,
Washington, D. C.

MY DEAR SENATOR KNOWLAND: I am concerned over a press clipping reporting your visit to Delano with the Southern San Joaquin Municipal Utility District officials and others because it indicates to me that the full facts of the situation have by no means been disclosed to you—so concerned that I am suggesting one or more of our staff from this region, including our construction engineer, meet with you either out there or in Washington at your convenience—I might say at your earliest convenience.

I shall not go into detail in this letter regarding the system because it seems to me important that we meet with you without delay. I am confident the full facts of the case will assure you that both our construction engineer, Mr. Durant, and the rest of our staff have done, are doing, and will do a complete job in delivering to the San Joaquin Municipal Utility District a satisfactory distribution system.

There is certainly no question of "inequity," of "subterfuge," or of "lack of concern" on the part of the Bureau. In fact, the construction of this system and the problems involved have been a matter of constant attention on the part of the chief engineer's office, of my office, and to a lesser extent of the Commissioner's office. We shall carry out the obligations of the Government to the full satisfaction of the water users as well as to the best interests of the Government. With regard to the latter, I should like to point out that it is as important to the Bureau as it is to the local people that a sound system be delivered because it is only through the operation of a sound system requiring a minimum of operation and maintenance costs that the United States can be assured of adequate repayment.

I might say that we are at the present time constructing three other distribution systems for the Lindmore district, the Ivanhoe district, and the Exeter district. We are having no serious trouble with any of these systems and are working with the local people, I believe, to the satisfaction of the district and district officials.

I shall not say more in this letter, but I am requesting a meeting with you on the part of my staff at the earliest opportunity in order that you may have the full facts before you.

Sincerely yours,

RICHARD L. BOKE,
Regional Director.

WELLTON-MOHAWK DIVISION, GILA PROJECT, ARIZONA

ADMINISTRATION BUILDING

Senator HAYDEN. I have likewise received communications from my constituents about the absolute necessity for a headquarters building in connection with the Wellton-Mohawk division of the Gila project. They are just getting water on the land there this year. They state there is no place for an operating headquarters.

Can you submit a statement to go into the record on that with suggestions as to reprograming budget funds to include this item?

Mr. LINEWEAVER. Yes, sir, in response to your letter of April 18, 1952, which is offered for the record with my statement.

(The statement referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON APPROPRIATIONS,
April 18, 1952.

Mr. GOODRICH W. LINEWEAVER,
Assistant Commissioner, Bureau of Reclamation,
Department of the Interior, Washington 25, D. C.

DEAR MR. LINEWEAVER: At such time as representatives of the Bureau of Reclamation present testimony before the Senate Committee on Appropriations relative to funds for fiscal year 1953, I will appreciate it if those representatives are prepared to discuss the following subjects:

1. Administration building on the Wellton-Mohawk division, Gila project.
2. Transfer of the Kansas River district headquarters from Indianola to McCook, Nebr.
3. The Utah Lake pumping plant on the Provo River project in Utah.
4. The requirements of the California State Highway Commission with regard to bridge and railroad-crossing facilities in connection with the Coachella distribution system.
5. The reimbursability situation on the Yuma-Mesa division, Gila project.
6. The progress of relations between the Department of Agriculture, the Western State colleges of agriculture, and the Department of the Interior with regard to reclamation developments.

Yours very sincerely,

(Signed) CARL HAYDEN,
United States Senator.

WELLTON-MOHAWK DIVISION, GILA PROJECT

Water users of the Wellton-Mohawk division, Gila project, Arizona, have requested the Bureau of Reclamation to construct an operation and maintenance service building as part of the construction of the Gila project. This building is to serve as headquarters for water users' employees when operation and maintenance of the Wellton-Mohawk division is taken over. Construction of a new building is requested because no suitable space is available for rent in the area.

The building required will be of cement block and concrete floor construction approximately 75 feet by 100 feet in size, and will be located in an area presently occupied by the Bureau's construction camp. It will contain a built-in vault, have a central heating and cooling system, and will consist of a number of office rooms and sufficient space to accommodate water users' meetings as well as meetings of the board. It is estimated that a building meeting these requirements can be constructed for approximately $100,000.

The Bureau's plan for development of the Gila project includes the turning over of irrigation facilities to the water users a section at a time and as rapidly as possible. The timing of the release to the water users will depend upon the development of operating criteria and evidence of the financial and organizational responsibility of the water users' organizations. Present indications are that the first section of the facilities will be released to the water users in the relatively near future and that a need for the building will exist by the time it can be constructed.

The Bureau included a budget request for $100,000 for this building, but the item was eliminated when the budget was sent up to the Congress. Funds for the building could be provided by reprograming if we were instructed to do so.

TRANSFER OF KANSAS RIVER DISTRICT OFFICE

Senator HAYDEN. Also one of the Senators from Nebraska was interested in the transfer of the Kansas River district from Indianola to McCook. Can you put a statement in the record about that, and how your funds could be reprogramed to take care of both the Wellton-Mohawk and McCook items?

Mr. LINEWEAVER. Yes, sir. You asked me how both of these items could be financed without increasing the budget estimate. We, of course, will do what the committee directs us to do by reprograming available funds for the Gila project and the Missouri Basin project if we are instructed to provide for these items, which the Secretary of the Interior has approved.

(The material referred to follows:)

CONSTRUCTION AND REHABILITATION

STATEMENT ON RECLAMATION OF THE KANSAS RIVER DISTRICT HEADQUARTERS FROM INDIANOLA TO M'COOK, NEBR.

The Kansas River district headquarters were established at the old Indianola prisoner of war camp because of the urgent need to commence Bureau operations in that district and because it was available and did not require a large initial outlay of funds. It also solved the immediate housing problems, because existing buildings could be converted to temporary residences and private housing was not available anywhere. It was fully recognized at that time, however, that this was a temporary expedient, as the prisoner of war barracks were designed only for use during a period of national emergency and were not suitable for permanent project headquarters. Since the buildings were not intended for office use, it has been necessary to disperse parts of the district staff throughout several buildings, which is highly undesirable from the standpoint of efficient operations. Furthermore, the flimsily constructed frame buildings present a constant fire hazard endangering life, records, and equipment.

From a purely economic standpoint the proposed relocation of the district headquarters to McCook is also very desirable. The average annual cost of operating and maintaining the facilities for headquarters offices purposes is approximately $30,500, including utilities. The average annual cost of operating and maintaining the residence portion of the Indianola camp, over and above rental income, has been approximately $51,000, including utilities. It is estimated that the average annual cost of operating and maintaining the new headquarters at McCook will be approximately $13,000, including utilities. Since no housing will be provided at McCook, the total estimated annual savings will be about $68,500.

The establishment of the headquarters at McCook will entail the purchase of a 10-acre tract of land with an existing 104-by-136-foot brick building thereon, remodeling the building for office use, and construction of a new two-story, 33 by 65-foot addition to the existing building, a warehouse, a vehicle maintenance shop, vehicle garages, a 20 by 100-foot operations and maintenance building, and the necessary sewer and water service facilities. The total cost of establishing the McCook headquarters, including the cost of moving from Indianola, is estimated to be $326,300. With an annual saving of $68,500 resulting from this move, it will be possible to completely absorb the cost of the headquarters relocation in a period of less than 5 years.

The President's budget for fiscal year 1953 includes $2,043,000 for the Frenchman-Cambridge division which, with presently available funds of $1,500,000, will provide for a total obligation program of $3,543,000. Of this total amount, $200,000 could be scheduled for the relocation of the district headquarters. The balance of $126,300 could be provided by reprograming other fiscal year 1953 work in the division. By this procedure it will be possible to complete the relocation within the present total program.

Provo River Project, Utah

DUCHESNE TUNNEL AND PROVO CANAL

Senator Hayden. What is the status of the Provo River project?

Mr. Lineweaver. This project in Utah is nearing completion. There is one little item there with respect to savings that we can accomplish by a proposed reprograming of $25,000 of the amount in the justification for expenditure for the Duchesne tunnel and to increase by a like amount the expenditures for the Provo Reservoir canal.

In view of the fact that this involves the reprograming, the Utah people ask that we place this in the record.

It really means we will be able to save something like $100,000 by working out the problem this way.

Senator Hayden. That may be inserted into the record at this point.

(The material referred to follows:)

Elimination of Utah Lake Pumping Plant, Provo River Project, Utah

It is proposed to reprogram $25,000 of the amount shown in the justifications for expenditures during fiscal year 1953 for Duchesne tunnel and to increase by a like amount the expenditure for the Provo Reservoir canal. This reprograming is possible by a reduction of costs to complete Duchesne tunnel in fiscal year 1953 and results in no change in the amount of funds requested for fiscal year 1953. This action will ultimately reduce the amount of funds for the Provo Reservoir canal by approximately $110,000.

As a feature of the Provo River project, provision has been included since project authorization for facilities to bring the water supply of the Utah Lake Distributing Co. from Utah Lake into the Jordan River for irrigation use on the lands of stockholders in the company. Various means have been under consideration for accomplishing that purpose in the most economical manner possible and, at the time of preparation of the justification, it appeared that the only feasible means would be by construction of the Utah Lake pumping plant at a cost of $135,000 scheduled for construction in fiscal year 1954. The pumping plant was to be used exclusively for the transportation of the irrigation water of the Utah Lake Distribution Co., a stockholder of the Provo River Water Users Association. Subsequent to presentation of the budget estimates and justification before the Committee on Appropriations of the House of Representatives, a means has been worked out for accomplishing the purpose without requiring construction of the new Utah Lake pumping plant. Understandings have been reached and now are being transformed into contracts that contemplate use by the Provo River project of excess capacity in the Associated Canal Co.'s existing pumping plant which is not a part of the Provo River project. The arrangements agreed upon provide that the Associated Canal Cos. will utilize the excess capacity in their existing plant to pump the water of the Utah Lake Distributing Co. from Utah Lake into the Jordan River. The Associated Canal Cos. will dedicate a portion of their pumping facilities to service the Utah Lake Distributing Co. requirements, for a lump-sum payment of $25,000. The Provo River Water Users Association will, in turn, assign to the United States the rights for pumping services and related interests acquired by such lump-sum payment and the Provo River Water Users Association will, in turn, be reimbursed in the amount of $25,000 from funds appropriated for construction of the project, and such sum so reimbursed will become a part of the project cost.

The entire amount involved is fully repayable to the United States by the Provo River Water Users Association under the terms of its existing repayment contract as authorized and required by the act of March 29, 1948 Public Law 462, 80th Cong., ch. 159, 2d sess.).

While the contractural arrangement just described is somewhat unusual, it has the twofold advantage of eliminating the need for construction of an additional project pumping plant estimated to cost $135,000 and of providing for commencement of the pumping services early in fiscal year 1953 rather than at a much later date subsequent to construction of a new pumping plant in fiscal year 1954.

Operation and Maintenance

POWER PROJECTS AND TRANSMISSION FACILITIES

Senator Hayden. Is there anything else?

Mr. McPhail. I have one more thing that I would like to tell the committee. It has to do with operation and maintenance for which the House allowed the full budget estimate.

The Bureau proposes to bring together in one integrated operation certain of the power functions of five separate projects in Colorado, Wyoming, and western Nebraska. These projects are the Riverton, Shoshone, Kendrick, Colorado-Big Thompson, and the units of the Missouri River Basin project in this area.

This proposal contemplates the operation and maintenance of transmission facilities and the adm nistration of the power sales of five projects through an operating and accounting unit distinct from other activities of the separate projects.

The power-transmission systems of these five projects have been interconnected and integrated for several years.

This proposal will simply present operating procedures and will effect material economies in the Bureau's operations. A full explanation of this proposed plan was made in the hearings before the House Subcommittee on Interior Department Appropriations for 1953 and may be found on pages 1072 to 1074 of those hearings. I thought this committee would like to know about that.

Senator Hayden. I am glad you brought our attention to that.

There is one other thing with respect to those veterans who have settled out there and their reimbursement situation.

Mr. Lineweaver. We have a statement on that.

Senator Hayden. They were in bad shape until they began to get $50 a ton for alfalfa hay. Things look better now.

There was a drawing for these lands. In order to qualify a man had to be a veteran. He had to have farm experience and he had to have $3,000.

Then there was some question about the quantity of land. I rather imagine that has been worked out. They could not make a living on 40 acres, but they can on a larger amount.

I think it will turn out to be a successful experiment.

Senator Cordon. I have heard about one in New Mexico that was not so successful.

YUMA-MESA DEVELOPMENT

Mr. Lineweaver. I have a statement on that that goes into the whole situation and brings the committee up to date on the Yuma-Mesa development going back to the expenditures that were made during

World War II in connection with the Yuma Airport or Yuma Air Base.

(The material referred to follows:)

REIMBURSABILITY SITUATION OF YUMA MESA DIVISION, GILA RECLAMATION PROJECT, ARIZONA

This memorandum summarizes the reimbursability situation of the Yuma Mesa division of the Gila project. In the years since the Gila project was authorized, many complex problems have arisen to affect construction and development cost of the Yuma Mesa division and the extent to which these costs can be financed by the water users.

As initially conceived the Gila project contained approximately 585,000 acres which were considerd susceptible of irrigation. Of this total, 150,000 acres were in the first unit, comprising essentially the Yuma Maso division, under a finding of feasibility approved by the President on June 21, 1937. Of that total of 150,000 acres in the Yuma Maso division 11,000 were designated as bottom land near the mouth of the Gila River, subsequently referred to as the North and South Gila Valleys.

Under authority of the act of December 21, 1928, the Public Works Administration in November 1933, allotted $100,000 to the Bureau of Reclamation for studies, plans, and specifications for the project. The engineering report on plans and cost estimates prepared by Senior Engineer Porter J. Preston, in 1934 proposed a plan to divert water from the Colorado River at Imperial Dam in lieu of the Parker-Gila project proposal, which was determined to be infeasible. Plans included service to 585,000 acres based upon a reconnaissance soil classification of land under the 600-foot contour. This report was followed in February 1936, by a report on Economic Feasibility of the Gila Project prepared by Messrs. W. H. Code, William Peterson, and W. L. Powers, Bureau consultants. The report was generally favorable to the project and to the engineering plan previously proposed. Cost of irrigation developments on the Yuma Mesa was estimated at $134 per acre for the 130,000-acre development.

Construction of Imperial Dam was started in December 1935 and in March 1936 the first construction contract on the Gila gravity main canal was awarded. Construction of the Gila headworks of Imperial Dam with 6,000 cubic feet per second capacity contemplated the ultimate development of the project to 585,000 acres. The tunnels in the Gila gravity main canal, the ultimate 100-foot base canal, and rock sections were all designed for comparable water surfaces so that the enlargement to the ultimate capacity of 6,000 cubic feet per second would not disrupt the hydraulic gradient. In 1939 the Gila gravity main canal was completed and work on the Yuma Mesa pumping plant to serve Yuma Mesa lands was well advanced. With passage of the act of July 30, 1947 (61 Stat. 628), commonly known as the Gila reauthorization bill, construction activities were limited to serve a project of 115,000 acres as authorized, comprising 75,000 acres in the Wellton-Mohawk division and 40,000 acres in the Yuma Mesa division. Of the latter area 25,000 acres on the Yuma Maso proper and 15,000 acres in the North and South Gila Valleys. However, work therefore accomplished in contemplation of ultimate development to 585,000 acres as compared with 115,000 acres permitted under the reauthorization act was in excess of the needs of the Gila project.

With the advent of World War II, the Army Air Force selected a tract of 1,420 acres of the most readily irrigated land on the mesa for the site of the Yuma Army Air Base. During certain seasons of the year, prevailing winds from the southeast and from the north created dust storms over the base to such an extent that the Army Air Force appealed to the Bureau of Reclamation for relief in the form of irrigation and cover cropping of strategic areas adjacent to the base, particularly an area of some 8,000 acres lying southeast of the base. A spokesman for the Army reported that it was estimated approximately a $2,000,000 annual loss was suffered to airplane motors because of the dust condition.

The Bureau received clearance from the War Production Board, Office of War Utilities, for priorities for necessary materials to alleviate the dust conditions. The major part of the Bureau's program during 1943 and 1944 was directed toward the maximum relief to the air base. Construction costs during those war years were increased unduly as the result of delays in obtaining supplies and labor and also as the result of issuance of a War Production Board stop order.

The Bureau of Reclamation has recognized since the inception of its development program for the Yuma-Mesa, Gila project, that the area presents many agricultural problems unique in the history of farming in this country. Early in 1942 Commissioner John Page appointed the Yuma Mesa predevelopment committee composed of personnel of the Bureau of Reclamation, the Department of Agriculture, the Universities of Arizona and California, and the Bureau of Indian Affairs which had some earlier experiences in subjugation of somewhat similar desert soils on the Pima Indian Reservation at Sacaton, Ariz. This committee met periodically to consider information accumulated by the University of Arizona on its Gila project farm, and to formulate a plan of development for Yuma-Mesa lands.

The principal deficiency of the mesa soils on the Yuma-Mesa division of the Gila project is their low water-holding capacity. This is directly related to fertility problems, inasmuch as applications of irrigation water carry certain fertilizers through the readily leached soils beyond the crop root zone. Special agricultural practices were found to be essential. These included modifications of planting and fertilizing practices and adaptations of irrigation methods involving land slope, large irrigation heads, length of run, and width of border. The necessity for more than ordinary refinement of land leveling was demonstrated early.

Following the procedures as recommended by the predevelopment committee, the Bureau of Reclamation sought as a pioneering undertaking, in response to the direction of the Interior subcommittees of the Appropriation Committees, to prepare approximately 10,000 acres of the Yuma-Mesa division for settlement through predevolpment. This area included land on which the dust-control work was undertaken. Predevolpment consists of leveling the land, installing farm ditches, fertilizing, and planting sudan grass and alfalfa. The first 10,000 acres of the Yuma-Mesa division proposed for this predevelopment activity comprised, at that time, only one-fifteenth of the area of the Yuma-Mesa division. It was anticipated that the per acre costs for this work on the actual area for which it was undertaken would, because of its pioneering nature, exceed the repayment ability of these lands. It was intended, however, that the experience thus developed would be transferable to the total potential development area of the Gila project, at the time approximating 585,000 acres, so that, spread over the entire area, the costs of development would be reimbursable. As heretofore pointed out, the act of July 30, 1947, reduced the area of the now authorized project from 585,000 to 115,000 acres. Of that 115,000-acre total, approximately 30,000 acres are public lands.

On December 30, 1947, the Bureau announced the opening to entry of 4,940 acres of public land constituting 54 farm units on the Yuma-Mesa division of the Gila project. Except for a limited area used experimentally in cooperation with the University of Arizona and the United States Department of Agriculture, these 54 farm units constituted the total acreage that has been planted to alfalfa and thus fully predeveloped. A second land opening on May 20, 1952, comprising 4,030 acres, including about 285 acres fully developed will complete disposition of public land on the Yuma Mesa. Farming operations by entrymen of predeveloped land have been successful so far with entrymen meeting all charges due the United States and making a satisfactory living.

Under the terms of the act of July 30, 1947, a repayment period of 50 years was made possible for the recovery of the construction costs. Because construction for the Yuma-Mesa division is not yet complete, it was not possible to announce in the public notices issued on December 20, 1947, and February 20, 1952, the amount of construction or predevelopment expenditures that would be recovered from settlers on a per acre basis. However, the Bureau in 1945 made a careful study of the repayment ability of these lands and has determined that $150 per acre for full predevelopment on public lands and $200 an acre for construction costs, on the average, is the maximum that can be repaid during the 50-year period. Estimated repayment of the construction component will be $260 on the best land with a lesser assessment on the remainder. The fact sheet which accompanied the public notices informed applicants for public land units that the Bureau anticipates that these charges will be applicable.

Notwithstanding that an average total of $350 an acre can be recovered from fully developed public lands, and an average of $200 an acre from privately owned lands for which no predevelopment work was done, the actual construction costs will exceed the above amounts due largely to the restricted area to be developed as a result of the passage of the Gila Reauthorization Act. The ultimate contracting entities and the amounts to be repaid thereby

have not been finally established in all cases. The Wellton-Mohawk irrigation and drainage district on March 4, 1952, executed a contract for repayment of costs allocable to the Wellton-Mohawk division. Agreement has been reached with the unit B irrigation and drainage district of the Yuma auxiliary project and the north Gila Valley irrigation district for delivery of water through the facilities of the Gila project, but these contracts have not yet been voted on by the electorate. Delivery of water to 845 acres in the south Gila Valley is being made under authority of the Warren Act (act of February 21, 1911, ch. 141, 36 Stat. 925, 43 Stat. 523). Contracts under the above-mentioned act also are being negotiated covering about 1,500 acres in the north Gila Valley outside the boundaries of the north Gila Valley irrigation district. Other south Gila Valley farmers currently depend upon a pumped underground supply and have manifested no interest in taking surface water from the Gila project.

As set out heretofore there are a number of items resulting in substantially increased costs which are properly allocable to other than the lands of the presently authorized Gila project. These items of construction expenditure are:

(*a*) The cost of dust control for protection provided to the Yuma Army Air Base during World War II.

(*b*) The increased wartime costs of those expenditures associated with wartime delays, the issuance of the War Production Board stop order, and other factors.

(*c*) The costs of experimental land and crop development incurred in determination of suitable crops which will benefit lands other than those actually cropped and which were to be spread over the total of 585,000 acres included originally in the Gila project.

(*d*) The cost of project housing built for construction activities which would be set aside to be amortized from rentals received.

(*e*) The cost of excess capacity in the Yuma Mesa pumping plant, the Gila headworks of Imperial Dam, and the Gila gravity main canal.

The total estimated cost of the Gila project is $55,374,664. The foregoing includes the cost of repairs of the Gila desilting basin assumed by the Army as well as a share of the cost of Laguna Dam paid by the Imperial irrigation district under the contract of October 23, 1918, and the Gila project share of Imperial Dam in the amount of $1,568,469. Excluding the cost of desilting basin repairs in the amount of $298,012, total project cost is estimated at $55,076,652. The cost of common project features totals $5,706,649 of which the Wellton-Mohawk division will assume $2,613,177. As shown in table 1 probably reimbursable costs total $46,747,609 and nonreimbursable, $5,897,633. The foregoing excludes operation and maintenance costs beginning with fiscal year 1952 which are expected to be offset by revenues during the development period or paid by irrigation districts under pending repayment contracts.

The costs allocated to acreage eliminated by the act of July 30, 1947, represent the portion of costs that is outside estimated payment capacity. It is not fully explainable on a capacity-basis reduction, but is justifiable from the standpoint of costs incurred during the period when the Bureau of Reclamation, for lack of congressional direction as to scope of the ultimate project, was unable to limit costs commensurate with a definitely established project acreage.

The item of $1,670,715 proposed as nonreimbursable is the increased cost of completing canals and laterals as actually accomplished in excess of unit costs under the original construction contract specifications in effect prior to the outbreak of World War II. The original contracts were terminated by the War Production Board. The foregoing represents a reduction of about 44 percent in the actual cost of $3,813,779 for the A and B canals and laterals through June 30, 1951. Both the Yuma Mesa unit and the Yuma auxiliary project will benefit from this reduction.

Predevelopment costs not reimbursable amount to $2,371,585 composed of $1,283,133 incurred for farm-unit development, and $1,088,452 for farming operations not covered by crop revenue. As explained above, these costs are allocable to dust control for the Yuma Army Air Base, and to the pioneering nature of the task assigned to the Bureau of Reclamation by the Congress to develop lands of such character that new techniques and practices were required to be worked out.

To fully explain table 1, each reimbursable item is discussed hereunder:

REIMBURSABLE COSTS

The sum of $3,978,707 in construction costs for the Yuma Mesa unit, part 1, consists of $844,257 in common-features costs, and $3,134,449 including funded operation and maintenance benefiting only this part of unit 1.

The estimated cost of part 2, Yuma Mesa unit, now total $750,309, including $201,014 in common feature costs and $549,295 in costs benefiting this unit only. The foregoing is not a complete estimate as plans for development of additional land are uncertain at this time.

North Gila irrigation district has been allocated $179,743 of Gila costs, composed of $172,166 in common features, and $7,577 for other work.

On the basis of 180 cubic feet per second the south Gila Valley has been allocated a total of $416,111. The foregoing includes $361,825 in common-features costs. As heretofore stated, negotiations have not yet been undertaken with a water-user organization in the south Gila Valley.

The Wellton-Mohawk division, while not involved in write-off, is brought into this analysis as the Wellton-Mohawk irrigation and drainage district has an obligation of $2,725,159 for common features of the project, including funded operation and maintenance through June 30, 1951.

The item of $456,090, as hereinabove explained, is the proposed reimbursable cost to be borne by the auxiliary project, amounting to $138 per acre for 3,305 acres.

Costs of $678,305 will be assumed by others. The foregoing includes $298,012 paid by Department of the Army for repair of the Gila desilting basin, $101,713 for houses transferred to the Parker power project, and $252,933 for the cost of housing to be reimbursed by rentals.

Of the predevelopment costs $1,599,985 is allocated as probably reimbursable, composed of $991,559 in anticipated revenue from predevelopment contracts, and $608,426 in farming costs, which have been retired by a like amount of crop revenue.

TABLE I.—*Estimated reimbursable and nonreimbursable construction and predevelopment costs, Gila project* [1]

CONSTRUCTION COSTS

	Probably reimbursable	Nonreimbursable	Total
Yuma Mesa unit, part 1	$3,978,707.19		$3,978,707.19
Yuma Mesa unit, part 2	750,308.77		750,308.77
North Gila Valley irrigation district [2]	179,742.73		179,742.73
South Gila Valley	416,111.50		416,111.50
Yuma auxiliary project [3]	456,090.00		456,090.00
Wellton-Mohawk division [4]	38,688,358.65		38,688,358.65
Allocated to acreage eliminated under act of July 30, 1947		$1,855,332.63	1,855,332.63
Increased prices due to war-time delays		1,670,715.00	1,670,715.00
Other	678,305.24		678,305.24
Total	45,147,624.08	3,526,047.63	48,673,671.71

PREDEVELOPMENT COSTS

Yuma Mesa unit, part 1	$1,599,984.56	$2,371,585.40	$3,971,569.96
Grand total	46,747,608.64	5,897,633.03	52,645,241.67

[1] For the Yuma Mesa division only, reimbursable costs are $8,059,249.99, nonreimbursable $5,897,633.03, total $13,956,883.02.

[2] North Gila Valley irrigation district will pay additional amounts under proposed repayment contract for the cost of water distribution facilities heretofore constructed and useful to the district.

[3] Obligation of unit B irrigation and drainage district limited to $138 per acre for 3,305 acres by contract approved as to form in department on Dec. 26, 1951.

[4] Repayable under contract of Mar. 4, 1952, between United States and Wellton-Mohawk irrigation and drainage district.

YUMA AIR BASE

Senator HAYDEN. There was constructed during the war one of the very large air bases there. That complicates the situation because there happened to be a dust problem. There are a number of complications there.

How are you getting along with the Department of Agriculture in connection with this Interior Department reclamation development, because there is a divided responsibility in there? You have to provide the water.

The Department has to give instructions on how to get along.

COOPERATION WITH STATE COLLEGES

Mr. LINEWEAVER. Mr. Chairman, we are progressing very well. We have a very close working agreement with the Western State colleges as the focal point for coordination between the Bureau of Reclamation and the Soil Conservation Service and the Bureau of Agricultural Economics and other agencies of the Department of Agriculture.

This is being worked out at the field level and is satisfactory. We think we are making excellent progress in maintaining this relationship.

I have a statement on that.

(The statement referred to follows:)

COOPERATION WITH STATE COLLEGES, UNITED STATES DEPARTMENT OF AGRICULTURE, AND OTHER AGENCIES

In connection with the planning, development, settlement, and operation of reclamation projects there frequently is need for information and services which best can be supplied by other agencies, particularly the land-grant colleges, including their agricultural extension services and experiment stations, and various agencies of the Department of Agriculture, such as the Bureau of Plant Industry, Soils, and Agricultural Engineering, Soil Conservation Service, Farmers Home Administration, Bureau of Agricultural Economics, and Rural Electrification Administration.

It is the policy and practice of the Bureau to seek the active cooperation of land-grant colleges, other State agencies, and agencies of the Department of Agriculture in conducting the necessary investigations and in supplying such information and services as their respective programs and facilities will permit in developing and carrying out the reclamation program. Programs involving interagency effort usually are developed in the field with the land-grant colleges serving as the focal point for such cooperation. These programs usually are formulated in accordance with memoranda of understanding or cooperative agreements among the agencies concerned.

On April 1, 1952, the Bureau of Reclamation had in effect 121 memoranda of understanding or agreements with State colleges and other agencies. Of these, 59 have been executed since January 1951 and others have been in effect for from 2 to as many as 8 years. Annual supplements are prepared to many of the general memoranda of understanding outlining specifically the work to be done during the ensuing year. Of the 121 agreements in effect, 98 include State colleges or universities in all 17 of the Western States. Agencies of the Department of Agriculture which are parties to certain of the agreements include the Agricultural Research Administration, Bureau of Plant Industry, Soils, and Agricultural Engineering, Forest Service, Soil Conservation Service, Bureau of Agricultural Economics, Farmers Home Administration, and United States Salinity Laboratory. The work done under these cooperative undertakings may be grouped roughly into four categories, namely: (1) Research on agricultural, engineering, and economic aspects of reclamation; (2) land classification; (3) settler assistance, including development farms; and (4) credit. Experience

during the past few years shows that these cooperative undertakings have been of great value in furthering the reclamation program. Research data made available have materially aided in improving the general quality of the program while technical assistance made available to settlers has enabled them to install initially better farm irrigation systems and to adopt improved and up-to-date farming practices. Of even greater significance is the more rapid development of new farm units. With adequate assistance and technical advice many settlers are now accomplishing in the first 2 years farm development work that formerly required from 5 to 10 years.

The work carried on under the general memoranda of understanding may be illustrated by the memorandum between the Kansas State College, the Bureau of Plant Industry, Soils, and Agricultural Engineering, the Soil Conservation Service Research, the Soil Conservation Service Operations, the Bureau of Agricultural Economics, the Kansas State Board of Agriculture, and the Bureau of Reclamation. The work to be done includes research on economic, engineering, soils and crop production problems, irrigation and drainage practices, educational work and settler assistance, and the organization and supervision of development farms. The annual program of work and the part performed by each agency is determined by a technical committee composed of representatives of the several agencies.

Some of the agreements are of a more limited and specific nature. For example, a memorandum of understanding recently entered into between the Washington State College, the Farmers Home Administration, and the Bureau provided for the joint formulation of plans for domestic water systems for the several irrigation blocks of the Columbia Basin project. Following such formulation the extension service of the State college would conduct educational work and the Farmers Home Administration would, within the limits of its programs, aid in the financing of the development of the domestic water systems.

In most of the Western States the Bureau cooperates with the State colleges and in many cases with the United States Salinity Laboratory and the Bureau of Plant Industry on land classification. This work includes the establishment of standards and specifications for land classification and the review of land classifications. Plans and schedules are being formulated whereby the making of soil surveys by the State colleges and the Bureau of Plant Industry will give preference where possible to areas where land classifications are required by the Bureau of Reclamation in order that the soil survey data may be available for use in the land classification.

Development farms are conducted by the Bureau in new irrigated areas in cooperation with State agricultural colleges. While the farms are conducted as a practical demonstration of the application of the irrigation and farming practices best adapted to the area, a portion of each farm usually is set aside for use of the State agricultural experiment station and agencies of the Department of Agriculture in conducting research on soils, crops, fertilizers, and methods of irrigation.

New settlers on reclamation projects usually are in need of technical assistance in clearing and leveling of land, the lay-out of the farm irrigation and surface drainage system, and the planning of domestic water facilities. Assistance is also needed in adapted kinds and varieties of crops and in proven irrigation and cultural practices. It is the policy of the Bureau to encourage other agencies to provide the needed assistance insofar as their facilities and programs will permit. On several projects the Soil Conservation Service working through soil conservation districts has been especially helpful in assisting farmers in land leveling and the lay-out of the farm irrigation system. The Farmers Home Administration provides much-needed credit for land development, housing, domestic water facilities, and for operating expenses. The State agricultural extension services have been helpful in all States in general educational work and in providing technical assistance. In many cases where the State extension services were unable to provide the necessary services the Bureau has entered into memorandums of understanding with State colleges whereby extension service furnishes the services of an assistant county agent to render special assistance to settlers, with the Bureau reimbursing the extension service for part of the cost.

An agreement with the State College of Washington under which assistance was made available to settlers primarily on the Roza division of the Yakima project and later on the Pasco pumping unit of the Columbia Basin project has been in effect almost 5 years. Development of the Roza division is now far advanced, and assistance to settlers on that project is now being handled by the

extension service without financial assistance from the Bureau. Scheduled construction on the Columbia Basin project in Washington will make water available for approximately 60,000 acres of land annually for the next several years, thereby presenting an unprecedented need for settler assistance. There is now in the making a renewal of the agreement with the State College of Washington covering a 3-year period. The Bureau's contribution will not exceed $60,000 annually, which is less than half the cost. Technical assistance provided through this agreement by assistant county agents comprises an important part of the general farm-development program for the Columbia Basin project. The demands for technical assistance on that project now and for some years to come will utilize all of the available resources of all the agencies involved. The cooperative program has developed close working relations among the State College of Washington, the Soil Conservation Service, the Farmers Home Administration, and the Bureau of Reclamation, thus assuring a well-balanced, coordinated program for the sound and rapid development of new family-sized irrigated farms.

The Bureau looks to the Farmers Home Administration to supply the settlers with credit where adequate credit cannot be furnished by other agencies. The Bureau collaborates closely with the Farmers Home Administration in aiding it in anticipating the credit needs of settlers on reclamation projects. Memorandums of understanding between the Departments of Agriculture and the Interior set forth the procedures employed when the Farmers Home Administration makes loans to settlers previous to the time they have full title to the land.

WATER AND SOIL INVESTIGATIONS

Senator CORDON. There was some testimony in the Agriculture hearing to the effect that the Department of Agriculture had not had an opportunity to make certain studies in advance of this programing, and that as a result the programing has gone forward without information which might have been very valuable had it been available, so it could have been incorporated in the planning itself.

I do not know whether I will be able to get that testimony, or not.

Mr. LINEWEAVER. I think I understand to what you are referring, Senator Cordon. We are endeavoring to remedy that problem so that we can ascertain through the Salinty Laboratory at Riverside or other agencies of the Department of Agriculture with respect to the mineral content or alkali, or whatever else of an unsuitable character might be in water that we propose to use for irrigation.

I will put a statement in the record on that.

Senator HAYDEN. That may be inserted into the record at this point.

(The statement referred to follows:)

COOPERATION WITH THE DEPARTMENT OF AGRICULTURE IN THE MATTER OF SOIL STUDIES

It has been the policy of the Bureau of Reclamation to work closely with the agencies interested in resource development at the field level and to keep them informed as to the Bureau's schedule and to anticipated needs for different types of services on reclamation projects. During 1951, this policy was broadened and formalized with the Department of Agriculture and resulted in supplying for the 17 Western States a schedule of anticipated needs for agricultural services area by area and project by project for fiscal year 1953. This was followed by conferences with representatives of the Bureau of Plant Industry, Soils and Agricultural Engineering, Bureau of Agricultural Economics, and Soil Conservation Service in which these needs were analyzed in terms of their respective 1953 budget limitations and agreement reached as to where their activities should be concentrated. It is proposed to continue this type of scheduling, extending further into the future and to work in closer cooperation with the field representatives of the agencies of the Department of Agriculture which are directly concerned and with representatives of the land-grant colleges and other local agencies in scheduling the anticipated needs. Furthermore, it is our policy to support the Department of Agriculture in its request for funds which are necessary to meet their responsibilities in connection with these needs.

SAN CARLOS INDIAN IRRIGATION PROJECT

Senator HAYDEN. When it came to the San Carlos Indian irrigation project, I insisted upon a soil survey. When you have more land in the area than you have water, there is no use in selecting anything but the best land. I think it is a wise procedure.

Senator CORDON. I cannot understand why it has not been followed.

Senator HAYDEN. They engaged extensively in pumping and that is how to convey the water from the wells to canals with the least loss.

Mr. LINEWEAVER. We think we have made substantial progress on the lower cost canal lining which was instituted at the direction of this committee. That was some 5 or 6 years ago when you were chairman.

We have now gotten out a booklet on that. The feeling of our engineers is that this program is going to contribute to a lower cost canal lining and offset some of the increased costs that are inevitable under rising prices.

Senator HAYDEN. I was reading one of my papers from home yesterday where they had taken advantage of some information derived from the Department of Agriculture and elsewhere about the quantity of water consumed by cotton trees and willow trees along the banks. They figured up that from the time they actually started the water until it got down to them they were losing about a quarter of it. They have cut all the cotton trees and they have lined the canal with modern cement.

They are going to have a quarter more water as a result of the gain in miles of transmission in the canal system.

I think it is a very important subject where water is getting scarcer and scarcer.

CANAL LINING PROGRAM

Mr. LINEWEAVER. I have a statement here, Mr. Chairman, that I will submit concerning the lower cost canal-lining program which we instituted in 1946 at the direction of this committee.

Senator HAYDEN. That may be inserted in the record at this point.

(The statement referred to follows:)

LOWER COST CANAL LINING PROGRAM

A growing concern over the fact that approximately one-third of all the water diverted from western streams for irrigation was lost in transit before it reached the farmers' fields, and the excessive cost of making canals and laterals reasonably watertight, prompted the Bureau of Reclamation to initiate its lower cost canal lining program in 1946. Aimed at the development of more economical methods of seepage control, the program has progressed through laboratory tests and experimental field installations of various types of materials and construction methods. Certain phases of the work have been delegated to State college experiment stations, cooperating with the Soil Conservation Service, through memoranda of agreement with those agencies.

After 5 years' work it is concluded that the lower cost canal lining program has been most successful. Progress during the first 2 years was covered in a general information report entitled "Lower Cost Canal Linings," dated June 1948. Subsequently, a number of special reports on equipment development, trial installations, cooperative tests, and condition surveys were issued. A "Summary Report on Canal Linings," with emphasis on lower cost methods for seepage control, prepared in the office of the chief engineer, Bureau of Reclamation, Denver, Colo., was issued in January 1951.

That report, which was intended principally for technical personnel, has since been expanded and brought up to date through calendar year 1951. Published in bulletin form for general use, it is now being distributed to irrigation interests in the West.

The following extracts are from this latest report:

"The principal accomplishments of the Bureau's efforts, from the standpoint of amounts of lower cost canal linings installed and water and land conserved, are as follows:

"1. Since 1946, more than 24,000,000 square yards of lower cost linings have been placed in 611 miles of new and existing canals. The amount stated includes about 18,000,000 square yards of unreinforced concrete and mortar linings, 2,000,000 square yards of asphaltic-type linings, and 4,000,000 square yards of earth-material linings.

"2. Annual savings in water as a direct result of lining the above canals are estimated at 76,000 acre-feet, with a value of $1,609,000. Savings through eliminating the costs of pumping wasted water have been included in this figure.

"3. Reductions in annual maintenance costs as a result of the above lining installations are estimated at $660,000. Hard-surface linings, for example, lower maintenance costs by reducing the requirements for weed removal and silt control and by lessening the damage from burrowing animals.

"4. About 5,900 acres of waterlogged land, with an estimated value of $903,000 have been reclaimed since 1946 by lining of existing canals with lower cost linings.

"5. About 9,100 additional acres, with an estimated value of $1,345,600, have been prevented from probable waterlogging by lining of new canals with lower cost linings since 1946.

"6. Miscellaneous additional savings from lining of canals since 1946 have been realized in the amount of $380,000. These savings include those resulting from the elimination of the need for drains, reduction in the amount of excavation required for a lined section, and the elimination of the danger of slides.

"The principal development in linings, lining methods, and methods of seepage investigation and the manner and extent to which these have assisted in the stated accomplishments, are as follows:

"1. The liberalization and simplification of Bureau specification requirements with respect to line, grade, and finish of hard-surface linings, have encouraged greater mechanization of placing equipment and resulted in lower construction costs.

"2. The elimination of reinforcing steel in concrete and mortar linings, except where safety is involved, has resulted in savings of 10 to 15 percent in the total cost. Current Bureau design practices with respect to use of reinforcing steel in concrete lining were recommended by a board of consultants which was appointed through the efforts of personnel charged with the early direction of the lower cost canal-lining program.

"3. The development of sub-grade-guided slip forms has made it economically feasible to line small canals and laterals with hard-surface-type linings which heretofore have been prohibitive in cost. These have now been adopted in the placing of both asphaltic and Portland cement concrete linings.

"4. The standardization of canal shapes and sizes, within a base width range of 2 to 6 feet, has aided in the standardization of slip-form equipment requiring less capital investment and thus contributing to lower construction costs. The standardization of canal design has also resulted in lower costs and faster completion of engineering work.

"5. A buried asphalt membrane lining has been developed which consists of a hot sprayed-in-place asphalt cement covered with a protective blanket of earth or gravel at costs less than half that of most hard-surface types. Prefabricated strips of asphalt membrane lining have also been used, but handling problems have not been completely solved.

"6. Adaptation of large earth-moving equipment has resulted in greater use of thick (6- to 8-foot) compacted linings of selected earth, so that for large jobs, bids are usually less for this type of lining than for buried asphalt membrane. Where suitable earth material is available with a minimum of haul and the job is large enough to fully utilize mechanized equipment, this type of lining has proven to be one of the lowest in cost.

"7. Devices and test procedures have been developed for the more economical location and measurement of seepage losses. The reliability and adaptability of these methods are being established by basic investigations and field tests. Although still in the development stage, some of these methods are being used to advantage in determining where the greatest losses occur so that maximum effectiveness can be obtained from a minimum of lining."

During the current year, special attention is being paid to the study and evaluation of canal lining by sitting and soil-blanketing operations. While some of the earliest attempts by the Bureau to control seepage were of this type, evidence seems to be that this early work met with varying success and that failures were due to a lack of understanding of all the factors involved. At the present time these methods of canal lining offer promise, under certain conditions, of reducing seepage without having to remove the water from the canal. This latter point is important where water flows in canals all year or where the nonirrigation season is unfavorable for construction work.

From the findings and developments in this program, worth-while savings are being realized. In the concrete lining of the Delta-Mendota canal alone, it has been estimated that elimination of reinforcement steel resulted in a saving of $2,850,000. Bid prices for lining in general have been substantially reduced since specification requirements have been liberalized. The development of sub-grade-guided slip forms and low-cost asphalt membrane linings has made seepage control economically feasible in many new and old lateral systems where costs for lining heretofore were prohibitive.

In order to fully benefit from investigations to date, the lower cost canal lining program will be continued. Existing experimental installations should be observed over a period of years, deficiencies should be corrected through additional experimental and design practices, and further development pursued. Efforts to arrive at methods for predetermining the need for seepage control before construction of distribution systems have just recently been started. The need is great to continue such work and to relate it to seepage losses by actual measurement after construction. Further improvement in equipment and placing methods are quite possible and the standardization of sizes, shapes, and design practices should be furthered. The collection of cost data for maintenance as well as for construction is required to properly compare the costs of various linings over their years of serviceable life.

CONCRETE PIPE STUDIES

Senator KNOWLAND. What studies are made on this concrete pipe situation, such as the southern San Joaquin district is having its trouble with?

Mr. MARKWELL. Senator, there have been rather intensive studies made to determine whether or not there is some fault in the specifications of the pipe, or whether it was faulty construction.

The contractor is ultimately responsible for a tight system. Both our own studies and those of a consulting board hired by the district itself reached the same general conclusion that it is the poor construction practices by the contractor which has resulted in these leaks.

Senator KNOWLAND. I am raising the question generally now, and referring specifically to this one district. What is your experience in other districts throughout the reclamation area? Are you having trouble with concrete pipe that would indicate that further studies should be made on the specifications?

Mr. MARKWELL. Elsewhere I do not think we are having anything but minor difficulties. However, we are constantly studying, through our laboratory and through any other information we can get anywhere else, in an effort to improve upon our specifications, not only for concrete pipe but for other engineering work.

However, I believe that we have taken the lead in concrete pipe design. We probably have the tightest specifications on that type of work.

Where the contractor is held responsible for the ultimate tightness of the system, it is completely his responsibility to see that he gets the cement in those joints properly without our having a man standing over each joint.

Where a contractor is careful, those systems go in without any difficulty. There are several systems right around the southern San Joaquin area where concrete pipe is functioning perfectly. Our research is a continuing item. We have given special study to this district because of the difficulty there.

Even without that, we would seek to improve all the time.

Senator KNOWLAND. Is it a customary practice to authorize the putting of manure into the system in order to tighten it up?

Mr. MARKWELL. It is not unusual, sir. The system would be completely flushed out afterward so that the water actually being delivered would not have any manure in it.

GENERAL PROVISIONS, KEATING AMENDMENT

Senator HAYDEN. I have omitted asking about some language amendments in the bill and one known as the Keating amendment. Is that language the same as it was?

Mr. LINEWEAVER. Our position on the Keating amendment, Mr. Chairman, as stated before the House committee is that the Keating amendment is unnecessary primarily because the Appropriations Committees and the Congress appropriate the funds for transmission lines and we are governed by what the allocations are. The language, therefore, is superfluous.

Senator HAYDEN. The way it was finally adopted in Congress, has that cramped your style?

Mr. MCPHAIL. It has not caused direct difficulty so far, Mr. Chairman, but it certainly provides a possibility of that in the future.

Senator HAYDEN. It did not happen last year?

Mr. MCPHAIL. No, sir. As it stands, even if the Congress gives this money and instructions to build a certain facility, we may find ourselves estopped by the Keating amendment. We think it is unnecessary.

WHEELING AGREEMENTS

We have wholeheartedly and successfully followed the mandates of this committee in getting wheeling agreements. We propose to continue that. We think after all when a line comes up for consideration that the Congress should judge it impartially, and when it is decided what we should do, then we should proceed and do that.

Senator HAYDEN. Is there an agreement between Nebraska, Wyoming, and Colorado, regarding the Glendo unit? What about that?

Mr. LINEWEAVER. We are trying to comply with the requirements of that proviso, but the plan for Glendo is not yet in shape to present to the Congress.

Senator HAYDEN. That language appeared in the bill. Also there was language with respect to the construction of Moorehead Dam and Reservoir. You are in the same situation there?

Mr. LINEWEAVER. Yes, sir.

Rio Grande Project

SOIL AND MOISTURE CONSERVATION OPERATIONS

Going back to your point with regard to soil and moisture, I have a statement on that, and also with respect to Picacho Arroyo and the Rio Grande project requested by Senator Anderson.

Senator Hayden. These may be inserted into the record at this point.

(The statement referred to follows:)

Soil and Moisture Conservation Operations

Soil and moisture conservation operations of the Bureau of Reclamation are particularly important in connection with the prevention of sedimentation of reservoirs and the protection of water distribution systems above reclamation projects, around which has been developed a major part of the agricultural economy of the Western States. The security of these projects and the economies developed through them will be endangerd if we neglect to protect key structures, related facilities, and the reclaimed areas from preventable damage by erosion and sedimentation.

During the past 2 years, a more effective attack has been made on the soil and water loss problems that confront us, particularly through increased construction on the Five Mile and Muddy Creeks above Boysen Reservoir in Wyoming and on the Rio Grande project above El Paso, Tex. In connection with this program, every effort is being made to accomplish worthwhile benefits on the ground, while holding overhead, and survey and investigations costs to a minimum.

Work in progress, mostly of a continuing nature, that we feel to be particularly noteworthy includes the program on sand-dune stabilization on the Columbia Basin project; erosion control on the lands immediately tributary to Shasta and Keswick Reservoirs of the Central Valley project through the building of minor structures and revegetation; water-conservation investigations throughout the Southwest, with emphasis on the eradication or control of salt cedars; operations for the control of erosion in the Book Cliffs area of Colorado; completion of construction for the control of erosion in the Lucero Arroyo above the main canal of the Rio Grande project; and continued construction and revegetation operations for the control of Five Mile and Muddy Creeks in Wyoming. An instructional movie of conservation practices for project water users has been completed in cooperation with the United States Department of Agriculture.

The soil- and moisture-conservation program of the Bureau continues to be accomplished both through its individual efforts and through effective cooperation with all other interested agencies in each of the areas concerned. The Bureau's field representatives work closely with the Bureau of Land Management, the Geological Survey, the Forest Service, and the Soil Conservation Service, as well as with soil conservation and irrigation districts and other water users' organizations. Cooperative agreements have been made with each of those agencies in one or more of our regions to insure that a definitely planned, concerted effort will be put forth in our attack on mutual problems.

The following is a list of the reclamation projects where formal or informal agreements are in effect for accomplishment of our program:

Region	Project	Extent of cooperation
1	Boise	Memoranda of agreement with Bureau of Land Management and with U. S. Forest Service.
1	Columbia Basin	Memorandum of agreement with Soil Conservation Service.
1	Mountain Home	Memorandum of agreement with Bureau of Land Management.
2	Central Valley	Agreement with Forest Service concerning administration of lands immediately tributary to Shasta Reservoir.
3	Salt River	Cooperative investigations with Bureau of Plant Industry and University of Arizona looking to more economical water use.
4	Grand Valley	Memorandum of agreement with Bureau of Land Management for conservation of lands in Book Cliffs area, Colorado.
5	W. C. Austin	Memorandum of agreement with soil conservation districts of three counties in Oklahoma covering lands immediately tributary to Altus Reservoir. This project was completed during fiscal year 1950.
5	Carlsbad	Memoranda of agreement with Soil Conservation Service and with a soil conservation district in New Mexico covering lands immediately tributary to Alamogordo Reservoir.
6	Huntley	Cooperation with Huntley irrigation project, Montana Agricultural Experiment Station, and Yellowstone soil conservation district.
6	Riverton	Cooperative program with Bureau of Land Management, Bureau of Indian Affairs, Geological Survey, and Soil Conservation Service.
7	North Platte	Cooperative program with Bureau of Land Management, Geological Survey, irrigation districts, soil conservation districts, and Army engineers.
7	Kendrick	Cooperation with soil conservation districts.

Measures proposed for accomplishment during fiscal year 1953, in addition to continued surveys and investigations of problem areas, include revegetation of overgrazed or denuded lands; construction of retention dams; development of water-spreading structures; construction of check dams and water drops along with other gully-control efforts; removal of salt cedar growth; and utilization of such other soil and moisture conservation practices as needed for specific conditions.

Soil and Moisture Conservation Operations, Proposed Picacho Arroyo Construction, Rio Grande Project

The Picacha Arroyo is located about 5 miles northwest of Las Cruces, N. Mex. Its watershed comprises three main branches which effect a junction just above the Bureau's Picacho lateral, which is located along the westerly edge of the Rio Grande Valley and serves a considerable acreage of the Rio Grande project lands.

Heavy sediment damages have occurred in the past as a result of flash floods over the Picacho Arroyo, and two upstream detention dams were constructed in the arroyo under the CCC program, 1935–37. These dams are still effective, but do not have the capacity nor are they located to control a major storm over the watershed.

Project officials estimate that in normal times there will be an average of three runs per year on the arroyo system. Although all of the past storms have not resulted in major damage to the project, each carries a certain element of loss; and a number of storms have been of sufficient magnitude that Picacho lateral which lies immediately under the discharging flood flows has been filled with sediment and other debris to the extent that service in the lateral has had to be discontinued until the lateral could be cleaned and rebuilt. Shut-downs in service for periods of up to 2 weeks have occurred, resulting in high maintenance costs to the Bureau and in considerable loss to private property.

During the past year, necessary surveys and investigations have been made to prepare cost estimates for construction required for protection of the Picacho lateral of the Rio Grande project from destructive heavy sediment-carrying flood flows in the Picacho Arroyo.

This proposed construction, including two major silt-detention structures and a bypass channel to carry impounded waters over the Picacho lateral and discharge them into the Rio Grande will also provide protection against having hundreds of acres of project lands made unproductive from deposition of sediment, and for protection against possible crop failure that might result on several thousands of acres if there was a serious wash-out of the Picacho lateral. A smaller project of a similar nature was completed in the Lucero Arroyo, on the other side of the Rio Grande, during fiscal year 1951 for protection of the Leasburg canal. We believe that the work now proposed for the Picacho Arroyo is equally necessary and desirable and will be fully justified by the benefits to be derived therefrom.

The following were among the points given detailed consideration in evaluating the need for control works at this location, and benefits that will accrue therefrom:

1. Approximately 1½ miles of the Picacho lateral lie directly in the path of the discharging floodwaters. Any portion or all of this reach of the lateral could be washed out or filled with debris to the extent that a shut-down in service to 3,500 acres of irrigated land would follow. The Bureau has a statutory obligation to furnish irrigation water to these lands; and a delay in service, should it occur during the heavy irrigation season, July or August, could result in a very serious crop loss. It is improbable that such a shut-down could be of sufficient duration to cause a total crop failure; but, based on a conservative estimate of 40 percent, value of the crop loss could be roughly $420,000.

2. The 1½ miles of Picacho lateral mentioned above includes several thousand dollars' worth of structures. Cleaning and rebuilding of the lateral would mean considerable maintenance cost; replacement of the ditch structures, should they be washed out, would be a major item of expense.

3. Wasteway No. 39, being directly in the flow path of the North Branch, could be filled with sediment or washed out. Here again added maintenance costs would result.

4. The IBC levee and other installations along the river are subject to damage from the arroyo flow. Although the Bureau is not directly concerned with maintenance of these structures, they are to some extent part of the system and must be kept up for efficient operation of the project. In this instance the resulting added maintenance costs would not be borne by the Bureau but would still be a direct loss to a Federal agency.

5. An important item for consideration is the effect that a major storm would have on the Rio Grande. The river on the Rio Grande project serves the dual function of main irrigation and main drainage canal, and is a controlled channel, with maintenance costs being borne by the United States Government. It is conceivable that a major storm could result in a concentrated flow that would cut through the Picacho lateral, and having wasteway No. 39 as a channel, would flow directly to the river. Not only would this excess flow be a threat to service and installations downstream, but as all large arroyo flows are accompanied by a heavy movement of sand, boulders, sediment, and other debris, the channel of the river could be clogged to the extent that systematic delivery of irrigation water to the entire project below this point would be seriously disrupted.

6. The present water shortage on the project emphasizes very clearly the need for more and better water conservation measures. Uncontrolled arroyo flows result not only in direct damage to the immediate area but in a loss to the project as a whole, insofar as it means a waste of water that could well be used for irrigation. Systematic control of flood run-off from a major storm could result in a saving of several hundred acre-feet of project storage.

7. Incidental to the factors already mentioned is the loss in private property that always follows these uncontrolled arroyo flows. Immediately under the arroyo outlet is about 350 acres of rich farm land that is subject to complete inundation. Not only could all of this area be flooded to such an extent that a complete crop loss would result, a loss which could approach $100,000; but part

of the area, about 150 acres, could be covered with sand, gravel, and other debris to such a depth that the land could be lost to further use, or that releveling would be required. In this same area are four sets of farm unit buildings, three irrigation wells, and numerous other private installations that are subject to heavy damage. These potential losses, although they do not affect the Bureau directly, would have an indirect effect on project operation as a whole. The private landowners in the area are so concerned with the problem and the need for arroyo control that they have volunteered to contribute right-of-way as required for installation of the protective works. Value of this right-of-way will amount to several thousand dollars.

In addition to the last point presented above, the board of directors of the Elephant Butte irrigation district has offered to contribute $20,000 toward the total cost of the work, estimated at $250,000, and has agreed, upon completion of construction, to assume responsibility for all future maintenance of the structures.

The Bureau of Land Management, with jurisdiction over public domain lands which make up a part of the Picacho Arroyo watershed area, concurs in the advisability of the proposed construction, and has expressed a willingness to contribute toward the total cost of the project, as appropriate.

FEBRUARY 13, 1952.

Hon. CLINTON P. ANDERSON,
United States Senate, Washington 25, D. C.

MY DEAR SENATOR ANDERSON: I am pleased to respond to your request for additional information concerning plans of the Bureau of Reclamation for control of erosion in the Picacho Arroyo, adjacent to the Rio Grande project in New Mexico.

As stated in Mr. John L. Gregg's letter to you, and as indicated in the resolution adopted by the board of directors of the Elephant Butte irrigation district on January 31, 1952, the Bureau of Reclamation, using fiscal year 1952 soil and moisture conservation funds allotted to the Rio Grande project, has made surveys and investigations necessary to prepare cost estimates for construction of structures in the Picacho Arroyo required for protection of the Picacho lateral of the Rio Grande project from destructive, heavy sediment-carrying flash-flood flows in the Picacho Arroyo.

This proposed construction, including two major silt-detention structures and a bypass channel to carry impounded waters over the Picacho lateral and discharge them into the Rio Grande will also provide protection against having hundreds of acres of project lands made unproductive from deposition of sediment, and for protection against possible crop failure that might result on several thousands of acres if there was a serious wash-out of the Picacho lateral. A smaller project of a similar nature was completed in the Lucero Arroyo, on the other side of the Rio Grande, during fiscal year 1951 for protection of the Leasburg canal. We believe that the work now proposed for the Picacho Arroyo is equally necessary and desirable and will be fully justified by the benefits to be derived therefrom.

We believe, also, that the fact that the board of directors of the Elephant Butte irrigation district, in its resolution of January 31, offered as a measure of local support to provide all right-of-way required for the Picacho Arroyo structures, to contribute $20,000 toward the cost of the work, and upon completion of construction to assume responsibility for all future maintenance, strongly corroborates the opinion of our field engineers concerning the justification for the proposed work.

The total item of $833,100 for soil and moisture conservation operations, included in the President's budget for fiscal year 1953 under "Operation and maintenance, Bureau of Reclamation," must provide for all soil and moisture conservation work on the 70 operating projects of the Bureau and on the watersheds above project reservoirs, canals, and other structures. From that total, limited funds are programed for continuation of our activities in the Picacho Arroyo, Rio Grande project.

We have recently been advised, however, by our regional office in Amarillo, Tex., that the field studies made to date indicate that more substantial structures will be required than was at first anticipated, and that the total cost of providing the necessary protective structures in the Picacho Arroyo will be approximately $250,000. It is estimated also that 2 years will be required to complete the work proposed. From our present analysis of all of these facts, it appears that funds now programed for this project in fiscal year 1953 will be $75,000 or $100,000 less than would be required to carry out the first year's operations in an orderly manner and to accomplish the work in the most efficient way possible.

As stated above, we believe this work to be feasible and fully justified, but we do wish to call your attention particularly to the unique character of the project and to the fact that it will require larger structures and a greater expenditure of funds than we have encountered on any single project of a similar nature that we have undertaken as a part of the Bureau's soil and moisture conservation program.

Sincerely yours,

G. W. LINEWEAVER,
Acting Commissioner.

UNEXPENDED CONSTRUCTION AND REHABILITATION FUNDS

Mr. LINEWEAVER. We have a statement here on the status of funds we always file with the committee, as a matter of record.

The tabulation shows what will be the status on June 30 based on estimates as of April 17, as well as the actual status on March 31.

Senator HAYDEN. That material may go into the record at this point.

(The material referred to follows:)

Unexpended construction and rehabilitation funds as of Mar. 31, 1952, and Apr. 17, 1952, estimate of status as of June 30, 1952

Project	Status as of Mar. 31, 1952			Apr. 17 estimate of status June 30, 1952		
	Unobligated funds [1]	Unliquidated obligations [2]	Total unexpended funds	Unobligated funds [3]	Unliquidated obligations [2]	Total unexpended funds
Eklutna	$1,263,034	$1,204,324	$2,467,358	0	$10,000	$10,000
Gila	2,193,512	832,213	3,025,725	$1,792,787	393,000	2,185,787
Colorado River front works and levee system	267,146	516,862	784,008	241,826	195,036	436,862
Boulder Canyon: Hoover Dam and power plant	555,996	1,695,088	2,251,084	400,000	540,000	940,000
Davis Dam	3,947,308	3,939,659	7,886,967	3,240,000	3,529,000	6,769,000
All-American Canal system:						
Coachella division	1,320,241	1,524,407	2,844,648	1,240,000	1,121,000	2,361,000
Imperial division	214,565	14,584	229,149	171,715	0	171,715
Cachuma	2,135,429	4,448,376	6,583,805	1,120,000	1,130,000	2,250,000
Central Valley	15,311,298	9,768,895	25,080,193	10,061,000	8,196,000	18,257,000
Kern River	59,498	90	59,588	51,000	0	51,000
Kings River	56,401	0	56,401	52,100	0	52,100
Colorado-Big Thompson	1,529,165	9,983,059	11,512,224	0	4,550,000	4,550,000
Paonia	214,986	1,245	216,231	208,476	0	208,476
San Luis Valley	634,749	24,970	659,719	580,000	4,000	584,000
Boise:						
Anderson Ranch Dam	431,939	109,302	541,241	276,058	98,876	374,934
Kuna (drainage)	49,360	0	49,360	44,242	0	44,242
Payette	331,053	434,519	765,572	215,000	406,357	621,357
Lewiston Orchards	20,220	3,948	24,168	13,900	8,000	21,900
Minidoka: Gooding division	37,911	325	38,236	36,153	0	36,153
Palisades	913,593	911,346	1,824,939	0	0	0
Buffalo Rapids:						
First division	318,981	0	318,981	246,000	25,000	271,000
Second division	68,837	7,796	76,633	0	0	0
Fort Peck	1,292,793	876,030	2,168,823	776,000	793,000	1,569,000
Hungry Horse	1,069,562	10,809,169	11,878,731	50,000	4,200,000	4,250,000
Milk River: Fresno Dam	19,852	124	19,976	9,000	1,000	10,000
Sun River: Greenfields division	12,241	5,666	17,907	6,000	1,000	7,000
Carlsbad	515	0	515	0	0	0
Fort Sumner	16,550	10,950	27,500	10,000	0	10,000
Middle Rio Grande	575,678	168,150	743,828	516,000	25,000	541,000
Tucumcari	64,281	7,544	71,825	3,000	1,000	4,000
Vermejo	254,512	4,221	258,733	245,000	0	245,000
Rio Grande: Elephant Butte power division	124,223	142,353	266,576	26,648	199,310	225,958
W. C. Austin	31,466	28,049	59,515	0	1,000	1,000
Deschutes: North unit	419,788	120,604	540,392	390,000	112,000	502,000
Ochoco	336,737	0	336,737	335,000	0	335,000
Klamath	323,607	85,296	408,903	200,000	20,000	220,000
Provo River	105,117	839,187	944,304	40,000	75,000	115,000
Columbia Basin	3,155,246	6,771,617	9,926,863	0	900,000	900,000
Yakima: Roza division	57,097	4,339	61,436	47,985	4,000	51,985
Eden	935,867	642,328	1,578,195	274,000	820,000	1,094,000
Kendrick	727,694	1,315,568	2,043,262	50,000	950,000	1,000,000
Riverton	520,122	528,661	1,048,783	160,000	100,000	260,000
Shoshone	301,940	81,333	383,273	302,537	4,000	306,537
Missouri River Basin	26,150,437	27,189,116	53,339,553	19,144,474	14,660,274	33,804,748
Rehabilitation and betterment	1,127,140	645,220	1,772,360	413,647	518,103	931,750
Water conservation and utilization:						
Buford-Trenton	2,835	3	2,838	0	0	0
Mancos	6,491	78	6,569	0	0	0
Inactive projects:						
Valley Gravity	816,996	0	816,996	816,996	0	816,996
All other	357,757	0	357,757	357,757	0	357,757
Total	70,681,766	85,696,614	156,378,380	44,164,301	43,590,956	87,755,257

[1] Consists of funds appropriated for specific work at specific places administratively reserved for contracts yet to be awarded for construction, equipment, materials and supplies, for purchase of right-of-way, and for Government payroll to end of fiscal year.

[2] Consists of funds appropriated for specific work at specific places legally reserved by appropriate notices to contractors of all classes for payment of contractor's earnings and for equipment, materials, and supplies ordered but not received.

[3] Consists of funds appropriated for specific work at specific places which had been administratively reserved for award of contracts for construction, equipment, materials and supplies, and purchase of right-of-way during the fiscal year but which were not converted to legal reservation under awarded contracts due to factors beyond the control of the Bureau of Reclamation, and for related Government personal services.

Unexpended construction and rehabilitation funds as of Mar. 31, 1952, and Apr. 17, 1952, estimate of status as of June 30, 1952—Continued

MISSOURI RIVER BASIN

Phase and unit or division	Status as of Mar. 31, 1952			Apr. 17 estimate of status June 30, 1952		
	Unobligated funds	Unliquidated obligations	Total unexpended funds	Unobligated funds	Unliquidated obligations	Total unexpended funds
Phase A:						
Bighorn Basin division: Owl Creek unit	$767,858	$171	$768,029	$765,139	0	$765,139
Bostwick division	2,188,601	566,769	2,755,370	1,600,000	$309,000	1,909,000
Boysen division: Boysen unit	741,138	1,204,506	1,945,644	588,000	617,000	1,205,000
Cannonball division: Cannonball unit	236,209	0	236,209	230,000	1,000	231,000
Cheyenne division:						
Angostura unit	229,715	556,256	785,971	50,000	5,000	55,000
Keyhole unit	402,167	521,134	923,301	350,000	77,000	427,000
Frenchman-Cambridge division	1,837,250	6,058,853	7,896,103	1,340,000	4,119,000	5,459,000
Grand division: Shadehill unit	90,787	69,514	160,301	62,000	70,000	132,000
Heart division:						
Dickinson unit	29,835	18,363	48,198	20,000	2,000	22,000
Heart Butte unit	610,138	32,574	642,712	588,000	5,000	593,000
Helena-Great Falls division: Canyon Ferry unit	2,153,860	4,502,315	6,656,175	1,500,000	1,700,000	3,200,000
Lower Bighorn division: Yellowtail unit	182,261	9,509	191,770	170,000	0	170,000
Marias division: Lower Marias unit	418,489	60,629	479,118	300,000	30,000	330,000
Missouri-Souris division:						
Jamestown unit	93,213	411,560	504,773	0	235,000	235,000
Missouri diversion unit	534,719	69,200	603,919	490,000	10,000	500,000
Moreau River division: Bixby unit	102,670	8	102,678	100,000	0	100,000
North Dakota pumping division: Fort Clark unit	35,295	348,918	384,213	0	235,000	235,000
Oregon Trail division:						
Glendo unit	432,228	1,665	433,893	395,000	0	395,000
Kortes unit	20,710	56,947	77,657	0	0	0
Smoky Hill division: Cedar Bluff unit	1,958,058	25,283	1,983,341	1,971,000	0	1,971,000
Solomon division: Kirwin unit	1,734,464	342,991	2,077,455	1,146,000	479,000	1,625,000
South Platte division: Narrows unit	174,876	38,000	212,876	181,915	38,000	219,915
Three Forks division: Crow Creek pump unit	115,260	0	115,260	100,000	0	100,000
Transmission division	5,129,765	11,988,077	17,117,842	2,941,322	6,627,678	9,569,000
Upper Republican division: St. Francis unit	1,402,271	2,563	1,404,834	1,486,000	0	1,486,000
Yellowstone division:						
Cartwright unit	135,044	60	135,104	134,247	0	134,247
Sadie Flat unit	646	0	646	0	0	0
Savage unit	7,526	90	7,616	4,500	0	4,500
Sidney unit	43,549	0	43,549	36,000	0	36,000
Subtotal, phase A	21,808,602	26,885,955	48,694,557	16,549,123	14,559,678	31,108,801
Phase B	2,592,281	164,675	2,756,956	1,855,164	50,196	1,905,360
Phase C	1,678,124	138,486	1,816,610	693,132	50,400	743,532
Phase D	71,430	0	71,430	47,055	0	47,055
Other agencies	0	0	0	0	0	0
Total, Missouri River Basin	26,150,437	27,189,116	53,339,553	19,144,474	14,660,274	33,804,748

SAVAGE RAPIDS DAM, OREG.

Senator CORDON. I would like to have Mr. Lineweaver spell out for the record the situation the Bureau has found in making an examination at the request of the irrigation district near Grants Pass, Oreg., on the Rogue River. This is in connection with Savage Rapids Dam. I do not know what can be done, or whether anything can be done under the law, or whether there are precedents.

I do know the people are in a serious situation due to former errors in dam construction and the high cost of trying to correct those errors. They were not made by the Bureau of Reclamation. It was a private initiative deal.

The Bureau at the request of the district to go over the matter, has made a report. I am not fully conversant with it. I have a general background of the situation.

I hope Mr. Lineweaver can present it here with any suggestions that he has with respect to it. It is one of those cases where if it had been a reclamation project in the first place, the situation could have been handled long since.

They can pay out if given an opportunity. If their dam goes out, they are all out of water.

Mr. LINEWEAVER. Senator, at your instance, we have gone into the matter and we have a report on the condition of Savage Rapids Dam. It is in a very critical condition. In 1950 a district employee was killed and another permanently injured in trying to install stop logs on the dam brought about by the lack of facilities to properly operate the dam. The situation with respect to irrigation, the delivery of water to some 10,300 acres, is also very critical by reason of the deterioration of the dam.

I will call attention to a peculiar or unusual situation. These 10,300 acres are all in suburban homesites or part-time farms. There are 2,985 units. These folks on these small units are mostly employed in the lumber operations in this area. The large number of people involved in this proposition are affected by the condition of this dam.

COST OF REHABILITATION

It is much larger than most of the situations we have run into. Our estimates of the cost of rehabilitating the dam itself would be $678,000.

In addition, the Oregon State Game Commission desires that fish screens be installed at an approximate cost of $207,000.

In addition to that, the district has outstanding with the Reconstruction Finance Corporation $350,000 in 4 percent RFC bonds. (See p. 1282.)

LANGUAGE CHANGE DISCUSSED

You have asked about precedents for handling problems of this kind. The Eightieth Congress met a similar situation with respect to the Arnold irrigation district by language in the appropriation bill, and similarly with respect to Ochoco Dam also in the Eightieth Congress. Also, in the Eighty-first Congress with respect to the

siphon for the Grants Pass irrigation district, a part of this same development on the Rogue River in Oregon, the situation came up and it was handled by special language in the appropriation bill.

Senator CORDON. It is an irregular step that has to be taken to meet an emergency.

Mr. LINEWEAVER. I would not say "irregular." It is not the ordinary way to handle problems of this kind to maintain the economy of established irrigated areas, but it has been done, and we are prepared to carry out any instructions given us, whether the areas are so-called reclamation projects or not.

Senator CORDON. I think "irregular" is a pretty good word for it.

Mr. LINEWEAVER. After it is done, it is regularized.

Senator CORDON. I understand that.

Take the job on the siphon. There you were instructed to do the work and get a contract for reimbursement. You did do the work and got the contract?

Mr. LINEWEAVER. We got the contract before we started work and the President's signature was hardly dry on the bill before we had the contract agreed to. The work started in time to carry the water over by the next irrigation season.

Senator CORDON. I was surprised at your statement that this was mostly part-time farming.

My understanding was there was a pretty sizable acreage of dairy farming depending on the water, too. I may be wrong.

Mr. LINEWEAVER. That perhaps is another area that you are thinking about. Our survey showed that there are 10,300 acres that are provided water by Savage Rapids Dam, by diversions from that structure. Of these, there are 2,985 units. Most of the units or a great many, are about 3 acres. None of them are over 50 acres.

Senator CORDON. I think you are correct in the maximum acreage because the land is fertile. Where they get the money it does not take many acres to operate a dairy, particularly if you have upland range.

The smaller units to a very great extent are intensively cultivated. They have, among other things, quite an extensive gladioli bulb industry in that section. It is very helpful to the people there.

Mr. LINEWEAVER. Ninety percent of the farms are under 10 acres. The average size is about 3.5 acres.

Senator CORDON. I do not know what we can do here, if anything. But would you prepare for the committee suggested changes in language that can cover this, if it can be covered?

Mr. LINEWEAVER. Yes, sir; the language requested will be submitted to you and the chairman, but I will submit for the record a statement on the condition of the Savage Rapids Dam.

(The statement referred to follows:)

SAVAGE RAPIDS DAM REHABILITATION, GRANTS PASS PROJECT, OREGON

The Savage Rapids Dam was constructed by the Grants Pass irrigation district which is located along the Rogue River in the vicinity of the city of Grants Pass, Oreg. This dam, which serves to divert water to the main gravity canal and provide head to operate the hydraulic pumping plant located at the dam, has fallen into a deteriorated condition that makes it difficult and dangerous to operate and does not furnish sufficient head to properly operate the pumping plant at all stages of flow. In 1950 a district employee was killed and another permanently injured in trying to install the stop logs on the dam. In addition

the Oregon State Game Commission has requested that new fish screens be constructed at the intake to the hydraulic pumps, to prevent fish being mutilated by the pumps or pumped into the irrigation canals and lost. To alleviate these conditions the Bureau of Reclamation has prepared a plan for rehabilitation of the structure by rebuilding the spillway gate system, repairing and protecting the spillway apron, installing fish screens at the intake to hydraulic turbines and pumps and making other incidental improvements in the vicinity of the dam.

It is estimated that the cost of the rehabilitation work will amount to $678,000. In addition the installation of the fish screens will cost approximately $207,000.

The irrigation district provides water for 10,300 acres. The district is predominantly an area of suburban homesites and part-time farms and less than 5 percent of the units can be considered full-time farms. There were 2,985 units in the area receiving water in 1950.

The district in 1947 launched an improvement program using in part, funds received from the Reconstruction Finance Corporation. Currently there are $350,000 in 4 percent Reconstruction Finance Corporation bonds outstanding against the district and it has been suggested that those bonds be purchased by the Bureau of Reclamation and be made interest free as part of the project costs.

Mr. LINEWEAVER. In this committee's report last year, we had instructions with regard to negotiations of a supplemental contract with respect to operations of the All-American Canal. I would like to report "mission accomplished."

Senator HAYDEN. The following information has been supplied in answer to a question asked earlier in the hearing, and will be placed in the record at this point.

(The information referred to follows:)

GENERAL PROVISIONS

LIMITATION ON CONSULTANTS

(See p. 580)

The Bureau of Reclamation engages consultants under two separate authorities—the act of February 28, 1929, and section 15 of the act of August 2, 1946. The limitation under consideration applies to services authorized by the act of August 2, 1946. The first regular Interior Department Appropriation Act enacted after August 2, 1946, was the 1948 act, which made funds available for the services referred to with no limitation. The 1949, 1950, and 1951 Appropriation Acts each included a limitation of $100,000 on the availability of funds for procuring these services. The 1952 act reduced the limitation to $50,000.

Data tabulated below show the expenditures for consulting services under both the authorities cited above for each year since funds have been available for services authorized by section 15 of the act of August 2, 1946:

	Fiscal years				
	1948	1949	1950	1951	1952 through Apr. 30, 1952
Act of Feb. 28, 1929	$29,396	$28,510	$23,028	$22,630	$15,847
Act of Aug. 2, 1946: Limitation in effect	(1)	100,000	100,000	100,000	50,000
Individuals	8,997	29,946	41,448	24,461	34,412
Contracts with consulting firms	0	0	36,000	37,500	10,000
Subtotal, act of Aug. 2, 1946	8,997	29,946	77,448	61,961	44,412
Total	38,393	58,456	100,476	84,591	60,259

[1] No limitation.

Detailed breakdown of amounts paid for consulting services in fiscal year 1951 and first 10 months of fiscal year 1952

	Fiscal year 1951			Fiscal year 1952 through Apr. 30, 1952		
	Number of consultants	Days worked	Total compensation	Number of consultants	Days worked	Total compensation
Act of Feb. 28, 1929: At rates of $35 to $50 per day	12	610	$22,630	16	346	$15,847
Act of Aug. 2, 1946: Individuals—						
At rates of $25 to $50 per day	7	411	13,077	7	206	7,752
At rate of $75 per day	1	3	225			
At rate of $100 per day (listed below)	6			8		
F. A. Banks		29	2,420		150	12,476
H. W. Bashore		27	2,272		14	1,186
C. P. Berkey		15	1,500			
J. W. Clarke					28	2,800
E. L. Grant					29	2,950
R. A. Hill		26	2,632			
M. M. Kelso					31	3,150
R. J. Newell		21	1,813		32	2,671
J. L. Savage					9	771
W. R. Young		6	522		7	656
Subtotal, individuals	14	538	24,461	15	506	34,412
Contracts with consulting firms:						
Kaufman & Stanton			12,500			
Ford, Bacon & Davis, Inc			15,000			
Pat Dowling Pictures			10,000			
Ionics, Inc						10,000
Subtotal, contracts			37,500			10,000
Subtotal, act of Aug. 2, 1946			61,961			44,412
Total			84,591			60,259

Senator HAYDEN. We will recess until 10:30 tomorrow morning.

(Thereupon, at 12:15 p. m., Thursday, May 1, 1952, the subcommittee recessed, to reconvene at 10:30 a. m., Friday, May 2, 1952.)